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POPULATION CRISIS

HEARINGS

BEFORE THE

SUBCOMMITTEE ON

FOREIGN AID EXPENDITURES

OF THE

COMMITTEE ON

GOVERNMENT OPERATIONS

UNITED STATES SENATE

EIGHTY-NINTH CONGRESS

SECOND SESSION

ON

S. 1676

A BILL TO REORGANIZE THE DEPARTMENT OF STATE AND THE DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

JANUARY 19, 26, AND FEBRUARY 9, 1966

PART 1

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CONTENTS

This is part 1 of the second series of hearings on S. 1676 entitled "Population Crisis," held during the 2d session of the 89th Congress. The initial hearings, held in 1965, were printed in four parts, including an index.

Page

Opening statements of the Chairman 1, 105, 179

WITNESSES

JANUARY 19, 1966

Dr. Edward L. Tatum, biologist, 1958 Nobel Prize winner for medicine and physiology 14

Dr. Dickinson W. Richards, physician, 1956 Nobel Prize winner for medicine and physiology 89

Dr. Albert Szent-Gyorgyi, physician, 1937 Nobel Prize winner for medicine 92

Dr. Polykarp Kusch, physicist, 1955 Nobel Prize winner for physics 95

JANUARY 26, 1966

Dr. Philip M. Hauser, Chicago, Ill., professor of sociology, and director, Population Research and Training Center and Chicago Community Inventory, University of Chicago 107

Mrs. E. T. Chanlett, Chapel Hill, N.C., U.S. Delegate to the Inter-American Commission of Women 157

Dr. Luigi Mastroianni, Jr., chairman, Department of Obstetrics and Gynecology, School of Medicine, University of Pennsylvania 163

Dr. Roger Lincoln Shinn, New York City, Professor of Applied Christianity and Dean of Instruction, Union Theological Seminary, and adjunct professor of religion, Columbia University 171

FEBRUARY 9, 1966

Mr. William E. Moran, Jr., dean, School of Foreign Service, Georgetown University 208

Mrs. Theodore F. Wallace, vice president, National Council of the Churches of Christ in the United States of America; accompanied by William Genne, director, Marriage and Family Life of the Staff of the National Council of Churches 225

Mr. James MacCracken, executive director, Church World Service Department, Division of Overseas Ministries, National Council of the Churches of Christ in the United States of America; accompanied by William Strong, director, Planned Parenthood Program of the Church World Service 233

Dr. Raymond Ewell, vice president for research, State University of New York, Buffalo, N.Y 267

EXHIBITS

JANUARY 19, 1966

No.		Page
1.	Photograph of Nobel Prize winners who testified on S. 1676 before the Subcommittee on Foreign Aid Expenditures	1
2.	Statements by President Johnson concerning population, January 4, 1965 through January 13, 1966	3
3.	New York Times excerpts describing the achievements of the Nobel Prize winners who testified before the subcommittee on January 19, 1966:	
	Nobel Prize goes to Szent-Gyorgyi, October 29, 1937	5
	Three U.S. Scientists get Nobel Prizes, November 3, 1955	6
	Nobel Prize in Medicine, October 19, 1956	6
	Three Win Nobel Prize for Heart Study, October 19, 1956	7
	Richards Describes Work, October 19, 1956	8
	Forssmann Acclaimed, October 19, 1956	8
	1956 Nobel Prizes Awarded by King, December 11, 1956	9
	Chemical Roles of Genes Studied, October 31, 1958	9
	Three U.S. Geneticists Win Nobel Medicine Award, October 31, 1958	10
	Three Laureates Worked in Teams; Group Research Behind Honor, October 31, 1958	11
	U.S. Funds Aiding Nobel Laureates, November 5, 1958	12
4.	Text of petition sent by U.S. Nobel Prize winners to Pope Paul VI, March 18, 1965	17
5.	List of American Nobel Prize winners who sent a petition to the Pope urging that the Church reconsider its stand on birth control	18
6.	"Noble Prize Winners Urge Pope Reconsider Ban," UPI article in the Washington Post, June 23, 1965	18
7.	"Recent Events in Population Control," article by Dr. John A. Ross, appearing in Studies in Family Planning, a publication of the Population Council, No. 9, January 1966	19
8.	"American Attitudes on Population Policy," a survey sponsored by the Population Council and conducted by the Gallup Organization, Inc., appearing in Studies in Family Planning, a publication of the Population Council, No. 9, January 1966	26
9.	Excerpts from the report of the University of Michigan Population Studies Center for the period from May 1, 1964 to June 30, 1965	31
10.	"Studies of Fertility and Family Limitation in Taiwan," article by Ronald Freedman and John Y. Takeshita, University of Michigan Population Studies Center, Ann Arbor, Mich., Eugenics Quarterly, volume 12, No. 4, December 1965	34
11.	"Farm Background and Differential Fertility," article by Otis Dudley Duncan, University of Michigan, which appeared in Demography, volume 2, 1965	51
12.	"Socioeconomic Factors in Religious Differentials in Fertility," article by Ronald Freedman, Pascal K. Whelpton, and John W. Smit, American Sociological Review, volume 26, No. 4, August 1961	60
13.	"Worldwide Fertility Trends," statement delivered by Ronald Freedman, University of Michigan Population Studies Center, at the U.N. World Population Conference, Belgrade, Yugoslavia, August 30 to September 10, 1965	66
14.	Letters from Nobel Laureates to Senator Gruening and to Dr. Tatum in support of S. 1676:	
	Dr. Fritz Lipmann	81
	Dr. John H. Northrop	83
	Dr. William P. Murphy	84
	Dr. Willis E. Lamb, Jr	84
	Dr. Emilio Segrè	84
	Dr. John F. Enders	85
	Dr. Hermann J. Muller	85
	Dr. Frederick C. Robbins	86
	Dr. Edward Doisy	87
	Dr. Konrad Bloch	87

No. Page

15. Letter from Dr. Dickinson W. Richards to Senator Ernest Gruening, July 10, 1965, in which he urged greater support of research in population control 88
16. "Retrospect and Prospect," chapter 18 of the "City in History," by Lewis Mumford 100

JANUARY 26, 1966

17. Photograph of witnesses who testified on S. 1676 before the Subcommittee on Foreign Aid Expenditures 105
18. "World Population Problems," by Philip M. Hauser, No. 174 of the Headline Series of the Foreign Policy Association, December 1965 .. 112
19. Letter from Senator Ernest Gruening to Dr. Raymond T. Holden, chairman, AMA Committee on Human Reproduction, October 22, 1965, asking for AMA views on population control 131
20. Letter from Dr. Raymond T. Holden, chairman, AMA Committee on Human Reproduction, to Senator Ernest Gruening, November 10, 1965, detailing AMA position on population control 131
21. "Inclusion of Material Basic to the Physician's Professional Role in Problems of Human Reproduction in the Undergraduate Medical School Curriculum," a teaching guide issued by the AMA Committee on Human Reproduction and sent by Council on Medical Education to all medical schools 132
22. "The Control of Fertility," a monograph prepared by the AMA Committee on Human Reproduction, Journal of the American Medical Association, October 25, 1965, volume 194, No. 4 135
23. "Medical Backing for Birth Control Grows," article by James C. Spaulding, Milwaukee Journal, October 9, 1965 147
24. "300,000,000 Americans Would Be Wrong," article by David E. Lilienthal, New York Times magazine, January 9, 1966 152
25. "Mechanism of Action of the Intrauterine Contraceptive Device in the Primate. 1: Tubal Transport of Ova and Distribution of Spermatozoa," article by Luigi Mastroianni, Jr., M.D., and Chusri Hongsanand, M.D., Excerpta Medica Foundation 166
26. "Responsible Parenthood and Population Problem," statement adopted by the Council for Christian Social Action of the United Church of Christ, January 30, 1960 176

FEBRUARY 9, 1966

27. Photograph of witnesses who testified on S. 1676 before the Subcommittee on Foreign Aid Expenditures 179
28. Message from the President of the United States on foreign aid, House Document 374 182
29. Message from the President of the United States on international education and health, House Document 375 192
30. Speech of U.S. Senator Joseph S. Clark, Democrat, of Pennsylvania, before the annual luncheon of the Planned Parenthood Association of Philadelphia, Congressional Record, February 8, 1966, pages 2438–2439 202
31. Letter from presidential candidate and former Senator, Barry Goldwater, of Arizona 206
32. "Population Growth: Threat to Peace" by William E. Moran, Jr., consists of an introduction and chapter "Attitudes of Our Society to the Population Question," edited by William E. Moran, Jr., published by P. J. Kenedy & Sons, 1965 217
33. "Responsible Parenthood," statement adopted by the General Board of the National Council of the Churches of Christ in the U.S.A., February 23, 1961 230

No. Page

34. Illustrated pamphlet entitled "Let Us Plan for Healthy Happy Children," prepared by the Committee on Christian Marriage and Family Life of the Christian Council of Ghana, Post Office Box 919, Accra, and printed by Presbyterian Press, Post Office Box 3255, Accra, available in Ga, Fante, Twi, and English, supplied by Church World Service ---- 238
35. Illustrated pamphlet in Spanish entitled "Ustedes Pueden Planear su Familia," describing the advantages of family planning, supplied by Church World Service ---- 240
36. Illustrated pamphlet entitled "You Can Plan Your Family," describing the advantages of family planning, published by the Planned Parenthood Association of the Southern Mountains, 113 Elliott Circle, Oak Ridge, Tenn., supplied by Church World Service ---- 243
37. Excerpts from a pamphlet entitled "Family Planning in Christian Marriage," discussing the importance of family planning within the context of a Christian marriage, and methods of contraception, published for the Christian Council of Nigeria by Daystar Press, Post Office Box 1261, Ibadan, Nigeria, Christian Home and Family Life Book No. 8, supplied by Church World Service ---- 247
38. Report, "Comision de Ayuda Social: Responsible Parenthood" by Bruce D. Carlson, Church World Service representative, Peru, December 1965 ---- 253
39. Illustrated pamphlet entitled "Mésié Benoit Ak Madanm Li," distributed in Haiti to explain family planning through the use of the intrauterine device, published by the Comite Protestant D'Alphabetisation, Haiti, 1966 ---- 257
40. "Mr. Benoit and His Wife," English translation of Creole pamphlet, published by the Protestant Literacy Committee, Haiti, 1966, and translated by Church World Service ---- 260
41. Memorandum describing the family planning program in Haiti by William D. Strong, director, planned parenthood program, Church World Service, February 11, 1966; Subject: Haiti Trip Notes, February 3–8, 1966 ---- 262
42. "Four Experts' Views—What Should United States Do About Birth Control?" by Women's News Service, the Globe-Democrat, St. Louis, Mo., January 28, 1966 ---- 263
43. "Famine and Fertilizer," by Dr. Raymond Ewell, Chemical and Engineering News, December 14, 1964, based on a talk Dr. Ewell gave at a meeting of the Division of Fertilizer and Soil Chemistry held during the 148th national meeting of the American Chemical Society in Chicago, Ill ---- 279

POPULATION CRISIS—1966

WEDNESDAY, JANUARY 19, 1966

U.S. SENATE,
SUBCOMMITTEE ON FOREIGN AID EXPENDITURES,
COMMITTEE ON GOVERNMENT OPERATIONS,
Washington, D.C.

The subcommittee met at 10:30 a.m., pursuant to recess, in room 3302, New Senate Office Building, Senator Ernest Gruening (chairman of the subcommittee) presiding.

Present: Senator Gruening.

Also present: Joseph Lippman, staff director; Herbert W. Beaser, chief counsel; Laura Olson, special consultant on population problems; Mary A. Miller, clerk; Joyce Polk, assistant clerk; and Carole Ransom, editor.

Senator GRUENING. The hearing will please come to order. Before proceeding with my opening statement, a photograph taken today of our distinguished witnesses will be placed in the record at this point.

EXHIBIT 1

Nobel Prize winners who testified on S. 1676 before the Subcommittee on Foreign Aid Expenditures, January 19, 1966 were: Dr. Albert Szent-Gyorgyi, Dr. E. L. Tatum, Dr. Dickinson W. Richards, and Dr. Polykarp Kusch. (Pictured left to right: Dr. Szent-Gyorgyi, Dr. Richards, Senator Ernest Gruening, chairman, Dr. Tatum, and Dr. Kusch.)

OPENING STATEMENT OF THE CHAIRMAN

Senator GRUENING. The Subcommittee on Foreign Aid Expenditures resumes hearings this morning on the population crisis. Before asking our distinguished witnesses to testify I wish to comment on the population explosion which has occurred since our hearings began last June 22, 1965.

WORLD POPULATION INCREASES 35 MILLION IN 7 MONTHS

In this short space of 7 months since we began the hearings, the world's population has increased by 35 million people. This number means that we have added to the world's population the equivalent of a Spain, a Poland, an Egypt, or a Turkey. Or this addition of 35 million inhabitants could mean that we have added the combined population equivalent of Scotland, Ceylon, Malaysia, Zambia, Kenya, and British Guiana. Or this addition approximately totals the combined populations of Bulgaria, Chile, Colombia, Costa Rica, and Denmark.

If we make comparisons with our own United States, it means the world has added a California and a New York.

We should consider these additions carefully. Two-thirds of the world was hungry when hearings began last year. No fewer are hungry today.

Yesterday I checked the literacy of the world's inhabitants. The Legislative Reference Service of the Library of Congress informs me that 45 percent of the world's population can neither read nor write, according to UNESCO statistics.

So although we agree with Thomas Jefferson who said nearly 180 years ago that giving information to the people is the most certain, and the most legitimate engine of government, I suggest we must put our best brains to work on the problem of how to inform people when nearly one-half of our world's population can neither read nor write.

These hearings will continue so long as they appear necessary. The subcommittee hopes that men and women who have contributions to make to them will contact us. Our purpose is knowledge and the dissemination, upon request, of that knowledge. To date 56 men and women have given oral testimony. Others have submitted written statements.

On previous occasions the subcommittee has been privileged to quote the President of the United States, who has met forthrightly this problem of the multiplying problems of our multiplying populations.

MANDATE FROM PRESIDENT JOHNSON

Four times in 1965 President Johnson publicly expressed his concern about the population explosion.

This year in his state of the Union address before Congress, on January 12, 1966, the President said:

> . . . that is what I have come here to ask of you. . . .
>
> * * * * * * *
>
> . . . that you give a new and daring direction to our foreign aid program designed to make a maximum attack on hunger and disease and ignorance in those

countries that are determined to help themselves, and to help those nations that are trying to control population growth.

* * * * * * *

I will also propose the International Health Act of 1966 to strike at disease by a new effort to bring modern skills and knowledge to the uncared for, those suffering in the world, and by trying to wipe out smallpox and malaria and control yellow fever over most of the world during this next decade, to help countries trying to control population growth by increasing our research, and we will earmark funds to help their efforts.

The President's concern is clear. His leadership is clear. He has given a mandate to the members of the executive agencies. Their action now and in the future will demonstrate clearly if they have listened. The subcommittee hopes they have.

At this time I shall place in the hearing record the earlier statements of President Johnson.

(The material referred to follows:)

EXHIBIT 2

STATEMENTS BY PRESIDENT JOHNSON CONCERNING POPULATION, JANUARY 4, 1965, THROUGH JANUARY 13, 1966

1965

1. *State of the Union Address before Congress*, January 4, 1965:

I will seek new ways to use our knowledge to help deal with the explosion in world population and the growing scarcity in world resources.

2. *20th Anniversary of the United Nations at San Francisco*, June 25, 1965:

Let us in all our lands—including this land—face forthrightly the multiplying problems of our multiplying populations and seek the answers to this most profound challenge to the future of all the world. Let us act on the fact that less than five dollars invested in population control is worth a hundred dollars invested in economic growth.

3. *Swearing-in ceremony of John W. Gardner* as Secretary of Health, Education, and Welfare in Rose Garden, The White House, August 18, 1965

This Administration is seeking new ideas and it is certainly not going to discourage any new solutions to the problems of population growth and distribution.

4. *Text of letter to U.N. Secretary General U Thant* at Second United Nations World Population Conference opening in Belgrade, August 30, 1965

MY DEAR MR. SECRETARY GENERAL: The United States Government recognizes the singular importance of the meeting of the second United Nations World Population Conference and pledges its full support to your great undertaking.

As I said to the United Nations in San Francisco, we must now begin to face forthrightly the multiplying problems of our multiplying population. Our government assures your conference of our wholehearted support to the United Nations and its agencies in their efforts to achieve a better world through bringing into balance the world's resources and the world's population.

In extending my best wishes for the success of your conference, it is my fervent hope that your great assemblage of population experts will contribute significantly to the knowledge necessary to solve this transcendent problem. Second only to the search for peace, it is humanity's greatest challenge. This week, the meeting in Belgrade carries with it the hopes of mankind.

1966

5. *State of the Union Address before Congress*, January 12, 1966

. . . that is what I have come here to ask of you. . . .

* * * * * * *

. . . that you give a new and daring direction to our foreign aid program designed to make a maximum attack on hunger and disease and ignorance in those countries that are determined to help themselves, and to help those nations that are trying to control population growth.

* * * * * * *

I will also propose the International Health Act of 1966 to strike at disease by a new effort to bring modern skills and knowledge to the uncared for and those suffering in the world, and by trying to wipe out smallpox and malaria and control yellow fever over most of the world during this next decade, to help countries trying to control population growth by increasing our research, and we will earmark funds to help their efforts.

Senator GRUENING. At this time I will call our panel members, 4 distinguished Nobel Prize winners, who with some 80 other Nobel Prize winners concerned about the population explosion expressed their concern by appealing last year to Pope Paul VI to urge him to reconsider the church's historic position on birth control.

Dr. E. L. Tatum, 1958 Nobel Prize winner for medicine and physiology, has made the arrangements for this panel. Dr. Tatum was honored for his pioneering work in what is now called biochemical genetics. The work was concentrated on a pink bread mold, the biochemistry of which Dr. Tatum and two other Nobel winners were able to manipulate by modifying the genes. Experts at the time said the finding would be valuable in cancer research.

Dr. Dickinson W. Richards, Jr., 1956 Nobel Prize winner in medicine and physiology, is one of three Nobel laureates credited with providing a new technique for cardiology, including the diagnosis and treatment of heart disease. The official citation said the recipients were being honored for their "discoveries concerning heart catheterization and pathological changes in the circulatory systems . . . . These investigations have meant that diagnosis can now be made earlier and with greater certainty than before . . . ."

Dr. Albert Szent-Gyorgyi, 1937 Nobel Prize winner in medicine, works at the Marine Biological Laboratory at Woods Hole, Mass. While a medical research worker at Szeged University in Hungary, Professor Szent-Gyorgyi received the Nobel Prize "for his discoveries on the biological process of combustion, especially in relation to vitamins A and C." He had noticed a relation between the scurvy-preventing properties of vegetables and fruits on the one hand and the adrenal glands of men and animals on the other. In Szeged, the heart of the paprika-growing district of Hungary, he extracted half a pound of pure vitamin C, or ascorbic acid, from paprika. Medical tests made of isolated ascorbic acid found that it had many healing qualities.

Dr. Polykarp Kusch, 1955 Nobel Prize winner in physics, is a member of the faculty of Columbia University. He shared the Nobel Prize in physics given for a major advance toward learning what goes on inside the atom which enabled scientists to calculate correctly the properties of some of the component parts of the atom.

For the purpose of more complete identification, I shall direct that there be placed in the hearing record at this time articles from the New York Times describing the achievements which brought Nobel prizes to our witnesses.

(The articles referred to follow:)

EXHIBIT 3

EXCERPTS FROM THE NEW YORK TIMES DESCRIBING THE ACHIEVEMENTS OF THE NOBEL PRIZE WINNERS WHO TESTIFIED BEFORE THE SUBCOMMITTEE ON JANUARY 19, 1966

[From the New York Times, Oct. 29, 1937]

NOBEL PRIZE GOES TO SZENT-GYORGYI

STOCKHOLM, SWEDEN, Oct. 28.—Professor Albert von Szent-Gyorgyi, Hungarian medical research worker of Szeged University, Hungary, was announced today as the winner of the 1937 Nobel Prize for Physiology and Medicine valued at about £8,000.

He was chosen for the prize by the Stockholm higher faculty of medicine "as a reward for his discoveries on the biological process of combustion, especially in relations to vitamins A and C."

ISOLATED VITAMIN C

LONDON, Oct. 28.—British scientists still vividly remember Professor von Szent-Gyorgyi's visit to Aberdeen in 1934 when at a convention of the British Association for the Advancement of Science he described his success in identifying and isolating vitamin C, or ascorbic acid, cheaply and in large quantities. Speaking in broken English, he gripped the imagination of the world's foremost scientists as modestly and haltingly he told the story of his researches.

After having noticed a relation between the scurvy-preventing properties of vegetables and fruits on the one hand and the adrenal glands of men and animals on the other, he said, he followed the trail to the Chicago slaughter houses. There, with the help of the Josiah Macy Jr. Foundation, he spent a year working on "literally tons" of adrenal glands of cattle, but managed to produce only a minute quantity of pure vitamin C.

In despair he returned home to Szeged in the heart of the paprika-growing district of Hungary. As a last resort he decided to try paprika, or red pepper, which is in common use throughout Hungary, and one day he extracted half a pound of the precious acid.

Apart from its cheapness, he found the pure vitamin notable for the ease with which its properties could be assimilated by a simple injection in the treatment of many diseases that hitherto had baffled medical men.

SON OF WEALTHY AUSTRIAN

Professor von Szent-Gyorgyi is the son of a once wealthy Austrian and has spent a large portion of his life in laboratories in Austria, Germany, England and Hungary. He has lectured at Harvard University, and in 1930 spent several months in the United States under the auspices of the Mayo Clinic and the Josiah Macy Jr. Foundation of New York.

The scientist received a degree of Doctor of Philosophy from Cambridge University in 1918, and during the following twelve years worked in many laboratories in Europe. In 1930 he returned to Hungary and began his efforts to isolate and identify ascorbic acid, or vitamin C.

Three years later he was successful and since then medical experiments have produced unexpected results by means of the substance, including cures of purpuric hemorrhages, nephritis, certain noninheritable forms of hemophilia, pyorrhea and Addison's disease. Professor Szent-Gyorgyi, however, has laid no claims to miraculous propensities of the substance, contending that medicine must test its properties carefully.

The identification and isolation of ascorbic acid might never have been discovered had not the wife of Professor Szent-Gyorgyi one day served him a luncheon dish too-strongly flavored with paprika. Rather than distress his wife by his lack of appreciation of her culinary achievement, he took his plate to his laboratory. There as a last resort he tried an analysis of the paprika, from which he finally extracted ascorbic acid.

After years of experiment with plants and substances from all parts of the world, his efforts succeeded with a plant grown in large quantities in his native land.

* * * * * * *

[From the New York Times, Nov. 3, 1955]

THREE U.S. SCIENTISTS GET NOBEL PRIZES

DU VIGNEAUD OF CORNELL WINS CHEMISTRY AWARD FOR WORK OF SYNTHESIZING HORMONE; KUSCH OF COLUMBIA AND LAMB OF STANFORD HONORED FOR ATOMIC DISCOVERY

STOCKHOLM, SWEDEN, Nov. 2 (AP).—Three United States scientists today won the 1955 Nobel prizes in chemistry and physics.

Dr. Vincent du Vigneaud of Cornell University Medical College will receive the $36,720 chemistry award for work on two hormones that help in childbirth and keep a check on vital organs such as the kidneys.

The physics award goes jointly to Dr. Willis E. Lamb of Stanford University and Dr. Polykarp Kusch of Columbia University. They will split $36,720 for work in connection with atomic measurements. Their work corrected an error made by a Briton who previously had won the Nobel prize.

The prizes, announced by the Royal Swedish Academy of Science, will be presented by King Gustaf here Dec. 10. The awards were created by the will of Alfred Nobel, inventor of dynamite.

* * * * * * *

The work that won the physics prize for Dr. Lamb, 42, and Dr. Kusch, 44, was described by the Academy as a major advance toward learning what goes on inside the atom. It enabled scientists to calculate correctly the properties of some of its component parts.

Dr. Kusch was born in Blankenburg, Germany, and was taken to the United States when a year old. He became a United States citizen in 1922.

In 1947 the two scientists, after having attacked the same problem from different angles, published papers proving that the energy level calculations for hydrogen atoms made by the 1933 physics winner, Dr. P. A. M. Dirac, did not agree with experimental evidence.

Dr. Dirac won his prize "for the discovery of new fruitful forms of atomic theory." The theory known as Dirac relativistic wave mechanics furnished directly a numerical value for the magnetic moment of the electron.

INACCURACY REVEALED

Dr. Kusch showed an inaccuracy of 0.1 per cent in the value. Dr. Lamb proved errors of about one ten-thousandth of the effect measured in the calculations of the spectral details of hydrogen on the basis of Dr. Dirac's formula.

Dr. Lamb won his half of the prize "for his discoveries regarding the hyperfine structure of the hydrogen spectrum." Dr. Kusch got the other half "for the precision determination of the magnetic moment of the electron."

* * * * * * *

[From the New York Times, Oct. 19, 1956]

NOBEL PRIZE IN MEDICINE

It is not unusual nowadays for a surgeon to run a catheter or hollow plastic tube through a vein in the arm into the heart. The purpose is to reach the heart directly, extract a sample of blood and note the effect of various agents—an idea which had attracted physicians for many years.

The first man to carry it out on a living human body was Dr. Werner Forssmann of Berlin. That was in 1929, when he was a young surgeon and an X-ray specialist still in his twenties. The living body was that of Forssmann himself. He had pictures made with the catheter in his heart. For all he knew then he was taking his life in his hands. He emerged from the ordeal with no ill consequences and thus helped experimentally inclined physicians to

find out what goes on in the heart in cases of rheumatic fever, congestive heart disease and other heart "troubles."

Dr. Forssmann shares this year's Nobel Prize in Medicine with Drs. André Cournand and Dickinson W. Richards Jr. of Columbia's College of Physicians and Surgeons and Bellevue. This is as it should be. The two Americans have long carried on basic research after improving and applying Forssmann's technique. Their first experiments were performed on animals. Human beings followed in 1940. The exchange of oxygen and carbon dioxide in the heart and lungs was measured. The heart's mechanical and chemical functions were studied in detail. All this was great work—a brilliant example of what can be accomplished by fundamental research on the heart. The result was a vast improvement in diagnosing heart disease and indicating what surgical procedures should be adopted, if any.

Our veterans have reason to be grateful for the work done by Dr. Cournand and Dr. Richards, for they were able to assure the Surgeon General of the Army that the administration of plasma to shell-shocked combatants in World War II was useless and that only whole blood would do. If more is known about the normal and abnormal heart and physicians know better than ever before how to deal with it, we have reason to be thankful to the winners of this year's Nobel Prize in Medicine.

[From the New York Times, Oct. 19, 1956]

Three Win Nobel Prize for Heart Study

(By Felix Belair, Jr.)

Stockholm, Sweden, Oct. 18.—The 1956 Nobel Prize for Medicine and Physiology was split three ways today between two Columbia University Professors of Medicine and a West German physician.

They were cited for their work in exploring with a thin tube the interior of the functioning human heart. This work was begun by the German on himself in 1929.

The prize winners are Drs. Dickinson W. Richards, 60 years old, of Columbia University; André F. Cournand, 61, also of Columbia, and Werner Forssmann, 52, of Bad Kreuznach, West Germany. They will divide $38,683.59 provided by the will of Alfred Nobel, the Swede who invented dynamite.

The three were credited with providing a new technique for cardiology, including the diagnosis and treatment of heart disease.

The official citation said the recipients were being honored for their "discoveries concerning heart catheterization and pathological changes in the circulatory system."

"These investigations have meant that diagnosis can now be made earlier and with greater certainty than before," the Nobel awards committee declared.

"In this way, the prospects of preventing further deterioration are increased."

Behind today's award was a line of inquiry begun twenty-seven years ago when Dr. Forssmann introduced a catheter tube into the vein of his right arm. Sitting behind a fluoroscope and keeping an eye on a large mirror, he pushed the tube gradually into the right ventricle of his heart.

Nobel scientists, who told this story, added that young Dr. Forssmann then had rushed to the X-ray department near by to demand that pictures be made.

In the words of the official citation:

"X-rays showed Forssmann that the head of the catheter had actually penetrated the heart. And the published paper by him some time later pointed out that, by injecting a 'contrast medium' through the catheter, it should be possible to obtain good X-ray pictures of the heart."

But, the Nobel scientists added, Dr. Forssmann was regarded as a crackpot by his colleagues, and his friends persuaded him reluctantly to drop his researches. He went on instead to become chief surgeon at a Dresden-Friedrichstadt hospital.

Thus, the inquiry was halted for several years until the Forssmann paper came to the attention of the Columbia men. They eventually showed how every known means for measuring pressures and blood compositions inside the heart could be safely applied by the method first tried by Dr. Forssmann on himself.

The Nobel committee of the Caroline Institute of Medicine and Physiology, which makes the annual award, had much to say about the importance of the

Columbia men's work but little on how they went about it. A participant in the judging put it this way:

"Among other things, Richards and Cournand attached precision pressure gauges to the catheter tubes. They penetrated the fully functioning human heart and pushed further on into the pulmonary artery and beyond, even into the lungs."

In this way, the instruments recorded automatically the pressure and other basal conditions within the heart so that they could be read at a glance in precise curves.

Nobel scientists mentioned as readily discoverable by the catheterization method any abnormal circulation channel between the left and the right sides of the heart. This, it was said, made it possible and practicable to correct by surgery the heart conditions productive of so-called "blue babies."

Accurate measurement of some heart diseases through visible variations of pressure in the pulmonary artery was another advance attributed to the Richards-Cournand technique.

Still another was the now-accepted method of blocking the entrance to the heart from one lung or the other by inserting an inflatable "stopper" with the catheterizer tube.

According to the citation the significance of the contribution by the award-winners was in making it possible for the first time to know what takes place inside the right-hand chamber of the human heart.

In this connection the Caroline Institute said:

"Measurements of the pressure in the lung artery revealed that in some cases pressure was raised when there was weakness in the left ventricle. Then the blood might pile up in the lungs and react on the pressure there.

"But the New York school was also able to establish that a rise in pressure may appear in the pulmonary artery independently of the left heart. This is sometimes the case in chronic lung diseases, for example, the silicosis and in lung expansion or in emphysema."

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[From the New York Times, Oct. 19, 1956]

Richards Describes Work

London, Oct. 18.—A long partnership between two physiologists who had investigated the fundamental mechanics of the heart, lungs and circulation was described here tonight by Dr. Richards.

He said he and Dr. Cournand began their studies in the Thirties. They "made all kinds of bags, pipes and boxes" in their attempts to find out how people kept alive by breathing. But it was not until they read of the work of Dr. Forssmann that they "really got down to the heart."

Aside from war work on the effects of shock, Dr. Richards considered that he and Dr. Cournand had "mostly stuck to methods of getting facts about the heart, lungs and circulation without injuring the organs" and pathological changes in the circulation system.

He said their work might help in man's physical conquest of the upper atmosphere in high-flying planes and "perhaps in space."

[From the New York Times, Oct. 19, 1956]

Forssmann Acclaimed

London, Oct. 19 (AP).—Expressing his "profound gratitude" for the Nobel award, Dr. Richards said it was Dr. Forssmann's "brilliant and courageous experiment in 1929 that showed the way which Dr. Cournand and I followed some years later."

Dr. Richards is in London with his wife on the final part of a two-month tour of Europe.

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Dr. Richards, who is Lambert Professor of Medicine at Columbia, was born in Orange, N.J. He has been on the Faculty of Medicine of the university since 1928.

He is attending physician at Presbyterian Hospital, and director of the Columbia medical division at Bellevue Hospital, a post he has held since 1945.

During World War II, Dr. Richards was a member of the subcommittee on shock of the National Research Council. He also served with the Office of Scientific Research and Development.

Dr. and Mrs. Richards have four daughters. Two of the daughters still live with their parents at Englewood, N.J.

Commenting on the Nobel awards, Dr. Grayson Kirk, president of Columbia University, acclaimed them as marking "a new step, and an extremely important one, in the march of mankind against crippling disease."

Drs. Richards and Cournand are the seventh and eighth members of the Columbia faculty to win Nobel honors. Polykarp Kusch, Professor of Physics, received the 1955 Nobel Prize in Physics.

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[From the New York Times, Dec. 11, 1956]

1956 Nobel Prizes Awarded by King

5 U.S. SCIENTISTS HONORED FOR WORK ON TRANSISTOR AND HEART EXPLORATION

(By Felix Belair, Jr.)

Stockholm, Sweden, Dec. 10.—Nobel awards were presented to five American scientists today. They were honored for basic research projects that produced the transistor and made possible the exploration of the human heart by catheterization.

Prizes in science and literature were awarded by King Gustaf Adolf of Sweden before a brilliant assembly. The Nobel Peace Prize was not awarded this year.

The occasion was the sixtieth anniversary of the death of Alfred Nobel, Swedish inventor of dynamite and promoter of peace.

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BY DARING EXPERIMENTS

A West German surgeon and neurologist who paved the way for heart catheterization by daring experiments on himself received an equal share along with two Columbia University professors in the prize in medicine and physiology. In exploration of the heart by catheterization, a narrow catheter, or tube, is advanced up a vein into the heart, providing a new technique for the diagnosis and treatment of heart disease.

The physics prize went to three Americans for the development of the transistor, a tiny and efficient substitute for the vacuum tube.

The citations and the winners were:

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MEDICINE AND PHYSIOLOGY

"For their discoveries concerning heart catheterization and pathological changes in the circulatory system"—Dr. Werner Forssmann of Bad Kreuznach, West Germany, and Drs. Dickinson W. Richards and Andre Cournand, both of Columbia University.

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[From the New York Times, Oct. 31, 1958]

Chemical Roles of Genes Studied

NOBEL WINNERS SHOWED HOW HEREDITARY UNITS FUNCTION IN LIVING ORGANISMS

(By Robert K. Plumb)

Studies of how genes controlled the chemical processes that take place in living organisms from bacteria to man won the 1958 Nobel Prize in Medicine and Physiology for three United States scientists.

Half a century ago, in 1910, Dr. Edward L. Tatum said yesterday at a news conference at the Rockefeller Institute, York Avenue and Sixty-sixth Street, the suggestion was made that genes controlled the process of heredity. In 1920 it was suggested that genes were organized into chromosomes like beads assembled into a chain inside living cells.

Seventeen years ago Dr. Tatum and Dr. George Beadle, now at the California Institute of Technology, started to measure the production by mutation and subsequent inheritance of nutritional deficiencies in Neurospora crassa, a mold that caused a pink growth on bread. Mutations are changes that alter heredity-carrying genes.

The two found that when genes in the fungi were changed by X-radiation, ultra-violet light, or chemicals, altered patterns of growth or function of the fungi were obtained.

DESCENDANTS NEEDED AID

When genes of normal spores of Neurospora, capable of synthesizing all their biological needs from very simple foods, were thus altered, the descendants of the fungi needed special dietary supplements.

Further, it was established that a single change in genes in the fungus could cause a single change in dietary requirements. A particular vitamin or an amino-acid would be required for growth of the altered fungus. The studies correlated the biochemical nutritional requirements and the genetic changes and established that genes acted by regulating specific chemical processes.

By this time, Dr. Tatum added, it is believed that genes are composed of nucleic acids formed into a double helical spiral. This spiral contains information that can be passed along from cell to cell. The information thus passed sets off a long sequence of chemical events leading to the formation, for example, of an enzyme essential to the production of one of the nutritive elements.

If one of the steps in the sequence is broken because of a change in a gene, the nutritive element must be supplied to maintain growth.

GENE MIXING STUDIED

Dr. Tatum then studied the effect of mutations on nutritional deficiencies of the bacteria Escherichia coli at Stanford University. At Yale, bacteria with mutation-caused deficiencies were studied by Dr. Tatum and a student, Joshua Lederberg, now Professor of Genetics at the University of Wisconsin. They demonstrated that at least one form of bacteria is capable of sexual reproduction normally characteristic of higher organisms.

Dr. Lederberg, who received half the Nobel Prize, and Dr. Tatum demonstrated that bacteria can blend in a sexual process in which they combine their genetic material. Mixing of genetic materials from two cells was demonstrated to produce a third strain of bacteria. This mixing is termed "recombination."

From Dr. Lederberg's studies, Dr. Tatum said, has come information elucidating the genetic mechanism of bacteria. The findings with bacteria are, in terms of genetics, similar to the earlier findings with fungi.

With a student of his, Dr. Norton D. Zinder, now at the Rockefeller Institute, Dr. Lederberg demonstrated that Salmonella bacteria could be altered by bacterial viruses in a process termed "transduction." In these studies, at the University of Wisconsin in Madison, it was shown that the virus could carry hereditary material from one bacterial cell to another.

Dr. Tatum said that it was difficult to assess the value of the studies on practical problems such as cancer, which is growth that proceeds without the control normally exercised by the genes in healthy cells. However, he added, as more is learned about normal growth it will help interpret abnormal growth.

[From the New York Times, Oct. 31, 1958]

THREE U.S. GENETICISTS WIN NOBEL MEDICINE AWARD

(By Werner Wiskari)

STOCKHOLM, SWEDEN, Oct. 30.—The Nobel Prize was awarded today to three United States geneticists. They were honored for outstanding contributions to physiology and medicine. Half of the $41,420 prize money will be divided between Prof. George Wells Beadle, 55 years old, of the William G. Kerckhoff Lab-

oratories of the Biological Sciences at the California Institute of Technology, Pasadena, Calif., and Prof. Edward Lawrie Tatum, 48, of the Rockefeller Institute in New York. These two Americans were honored for their discovery, through experiments with bread mold that genes transmit hereditary characters by controlling chemical reactions. The other half of the prize goes to the youngest of the three laureates, 33-year-old Prof. Joshua Lederberg of the University of Wisconsin. He was recognized for his use of bacteria, through which more extensive studies of genetic mechanisms might be conducted. He was cited specifically "for his discoveries concerning genetic recombination and the organization of the genetic material of bacteria."

Hailing the three laureates, Prof. T. Caspersson of the Royal Caroline Medico-Chirurgical Institute, which makes the annual selections, said their discoveries had made possible a rapid development of a branch of knowledge by which cancer research "will be strongly influenced."

In their study of genes, Professors Beadle and Tatum were credited with having made understandable a bewildering multiplicity of effects.

Noting indications that genetic mechanisms were similar in both plants and animals, they chose for their experimental materials Neurospora crassa, a simple organism that can be grown in a culture medium consisting of sugar, salts and biotin, a growth factor.

It had been shown that X-rays caused mutations or changes in individual genes. Finding that some of the Neurospora altered by irradiation no longer grew, but perked up again if a substance such as Vitamin B_6 was added, the two professors concluded that the X-rays had damaged the gene needed for the synthesis of the vital vitamin. Only when the vitamin was supplied did growth continue.

The two laureates were able to show later that the individual gene acted by controlling individual steps in the chemical synthesis going on in a cell. Gene activity earlier appeared so hopelessly complex they demonstrated, because of the great number of genes that joined in the formulation of even simple substances.

Professor Lederberg is given much of the credit for having developed bacterial genetics in recent years into a comprehensive field of research. He is also credited with having discovered a method of artificially giving organisms such as bacteria a new look by introducing new genes into them, thereby providing valuable means of investigating the substance of heredity.

Today's award, the twenty-first medical prize going to the United States, is the last of the four Nobel honors to be announced here this year. The fifth, the Peace Prize, will be made public in Oslo, Norway, in accordance with the will of Alfred Nobel, Swedish inventor of dynamite, who left a fortune for the prizes.

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TATUM IS GRATIFIED

Professor Tatum issued the following statement here yesterday:

"It is quite an overwhelming feeling, naturally. It is always gratifying to a scientist to have his work recognized and to feel that his work has contributed to human welfare and knowledge I am sure I express the feelings of my colleagues when I say that it makes me proud and humble to represent America in the field of international reseach and understanding."

[From the New York Times, Oct. 31, 1958]

THREE LAUREATES WORKED IN TEAMS; GROUP RESEARCH BEHIND HONOR

BEADLE AND TATUM PIONEERED NEW FIELD OF BIOCHEMICAL GENETICS—WIFE JOINED LEDERBERG IN STUDES

Genes work in teams, and so, it seems, do those who study them. The three United States geneticists honored yesterday with a Nobel Prize have paired off in a number of combinations in their attacks on the problems of heredity.

The eldest of the trio is Dr. George Wells Beadle, 55 years old, Professor of Biology at the California Institute of Technology in Pasadena. He shares half the prize in medicine and physiology with Dr. Edward Lawrie Tatum, 48, a professor at the Rockefeller Institute.

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The other half of the prize went to Dr. Joshua Lederberg, 33 , of the University of Wisconsin School of Medicine. Despite his youth, he is not the youngest to receive a Nobel Prize. Last year Dr. Tsung Dao Lee of Columbia University shared a prize in physics when he was only 31.

USED PINK BREAD MOLD

Drs. Beadle and Tatum were honored for their pioneering work in what is now called biochemical genetics. They concentrated on a pink bread mold whose biochemistry they were able to manipulate by modifying the genes. Previously Dr. Tatum was teamed with Dr. Lederberg, his former student, to study gene recombination in a form of intestinal bacteria.

In 1950 Dr. Lederberg's wife, Esther, obtained her doctorate so that she could join in her husband's work. In 1947 Drs. Tatum and Lederberg also worked jointly to produce evidence of bi-parental inheritance in bacteria.

It was while Dr. Lederberg was in his second year at Columbia University's College of Physicians and Surgeons that he left, in 1946, to work under Dr. Tatum, then at Yale University.

Dr. Lederberg was born in Montclair, N.J., and grew up in the Washington Heights district of Manhattan. He graduated with honors from Columbia College at 19, having taken a pre-medical course there. When he went to Yale he says he expected to remain only three months before returning to complete his medical studies, but he has been doing genetic research ever since.

After receiving his doctorate at Yale in 1948 he went to the University of Wisconsin as an Assistant Professor of Genetics.

STUDIED IN NETHERLANDS

Dr. Tatum was born in Boulder, Colo., and went through the University of Wisconsin from the freshman class to a doctorate in biochemistry in 1934. After a year of research there he moved to Utrecht, the Netherlands, as a General Education Board fellow in bacteriological chemistry. In 1937 he went to Stanford University, in California, and when he left there in 1945 he was an assistant professor.

After three years at Yale he returned to Stanford. Since January, 1957, he has been a member and professor at the Rockefeller Institute in New York. His wife is the former Viola Kantor. He has two daughters by a previous marriage.

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[From the New York Times, Nov. 5, 1958]

U.S. FUNDS AIDING NOBEL LAUREATES

THREE SCIENTISTS, MEDICINE PRIZE WINNERS, BACKED BY RESEARCH GRANTS

WASHINGTON, Nov. 1.—The three American scientists who won the 1958 Nobel Prize in medicine Thursday were assisted in their research by financial support from the Federal Government.

Over the last several years the three have received $334,018 in research grants through the National Institutes of Health to carry on the work in biochemical genetics for which they have been honored. The National Institutes of Health is the research arm of the Public Health Service.

The scientists are Prof. William G. Beadle of the California Institute of Technology, Pasadena, Calif.; Prof. Joshua Lederberg of the School of Medicine of the University of Wisconsin, Madison, Wis., and Prof. Edward Lawrie Tatum of the Rockefeller Institute in New York.

This is not the first time that United States Government-supported research has won a Nobel Prize, but the latest award, in the opinion of research officials, illustrates two points about the role of government in science.

One is that, despite the self-criticism that followed the launching of the first Soviet satellite more than a year ago, the United States Government has been supporting much fundamental scientific research and with profitable results. The National Institutes of Health has consistently had larger appropriations from Congress for research than the Administration has proposed for it.

The other point is that, with the growing complexity and cost of modern research, some Government subsidization is not only almost inevitable but also is profitable.

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Dr. Tatum, at the Rockeller Institute, has received $113,994 in research grants since 1951. He at present has a $14,145 grant from the National Cancer Institute for research on the biochemical genetics of microorganisms.

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Senator GRUENING. I shall now call on Dr. Tatum to introduce his fellow panelists, and to tell us something about his and their work. I will direct that a biographic statement of Dr. Tatum be placed in the hearing record at this point.

BIOGRAPHIC STATEMENT: EDWARD L. TATUM

Dr. Edward L. Tatum, cowinner of the Nobel Prize in 1958 for medicine and physiology, has been a professor of the Rockefeller Institute since January 1, 1957. His field of research is genetics, and the metabolism of bacteria, yeast, and molds. His research is aimed at a clearer understanding, at the molecular level, of how genes determine the characteristics of living organisms.

He was born December 14, 1909, in Boulder, Colo. His father, the late Dr. Arthur L. Tatum, was professor of pharmacology at the University of Wisconsin.

The University of Wisconsin awarded Dr. Tatum an A.B. degree in chemistry in 1931, an M.S. degree in microbiology in 1932, and a Ph. D. in biochemistry in 1934. He also holds honorary degrees from his alma mater and from Rutgers University.

Dr. Tatum was a general education board fellow in bacteriological chemistry at Utrecht, Holland. From 1937 to 1945 he was in the biology department of Stanford University. After spending the following 3 years as a member of the Yale University faculty, he returned to Stanford in 1948 as professor of biology.

In 1953 he received the Remsen Award of the American Chemical Society for his contributions to a new field of biology, biochemical genetics.

Dr. Tatum belongs to numerous scientific societies, including the National Academy of Sciences and the American Philosophical Society. He is president of the Harvey Society and was chairman of the Genetics Study Section of the National Institutes of Health for the year 1964–65. He is also on the board of trustees of the Cold Spring Harbor Laboratory of Quantitative Biology and on the board of scientific consultants of the Sloan-Kettering Institute and the Jackson Memorial Laboratory.

Dr. Tatum serves on the scientific advisory panel of Research To Prevent Blindness, on the advisory committee for research of the American Cancer Society and on the advisory council of the Children's Hospital Research Foundation in Cincinnati. He is also a member of the National Science Board and the Research Advisory Committee of the National Science Foundation. He was chairman of the executive board of the Scientists Committee for Voter Information for 1964 and is chairman of the Scientists Institute for Public Information.

Dr. Tatum is married, and has two daughters.

STATEMENT OF DR. EDWARD L. TATUM, BIOLOGIST, 1958 NOBEL PRIZE WINNER FOR MEDICINE AND PHYSIOLOGY

Dr. TATUM. Thank you, Senator Gruening and members of the subcommittee.

It is indeed a privilege to meet with you today, and with some of my colleagues, to testify in these hearings on bill S. 1676.

You have already heard from a large number of scientists, physicians, and others concerned with the problems of population control, as listed in the Congressional Record of October 1, 1965. These include scientists such as Dr. Seitz, president of the National Academy of Sciences; Dr. Kistiakowsky, of Harvard University and former science adviser to President Eisenhower; and Dr. Stebbins, dean of the School of Hygiene and Public Health, Johns Hopkins University. More specialized testimony has been given by experts in regard to the economic and sociological aspects of population growth, and in regard to practical methods of birth control. These witnesses have included gynecologists and obstetricians, such as Drs. A. F. Guttmacher, E. M. Solomon, R. B. Nelson, and A. Hellegers, J. Rock and J. Lippes; and demographers such as Drs. F. Notestein, L. Corsa, Jr., O. Harkavy, B. Berelson, and I. Taeuber.

"IRRESISTIBLE FORCE" MEETING "IMMOVABLE OBJECT"

Those of us here today, Dr. Kusch, Dr. Richards, and Dr. Szent-Gyorgyi, and myself, are not here as experts in either population problems or in birth control. That we are Nobel laureates in science does not make us experts in these areas.

Rather, we are here as individuals representing different scientific disciplines, united in our common concern for the future of mankind and society and to express our conviction that this future, both social and scientific, depends on rational solution of the population problem facing us today. This problem might be paraphrased in terms of the old problem in physics, as the "irresistible force" of population growth getting closer and closer to meeting head on the "immovable object" of limits of natural resources. That they will meet at the present rate of population growth, and that the consequences would be disastrous for mankind and society, is undeniable.

NOBEL LAUREATES CALL FOR ACTION . . .

As representative and informed citizens of many countries of the world, the Nobel laureates have been deeply concerned for many years with the world problem of population growth, and have expressed this concern and their views strongly on a number of occasions. The basic reasons for their concern can perhaps best be given by quoting from some of the statements which they have supported.

. . . BY THE UNITED NATIONS

One such statement, signed, among many others, by 38 Nobel laureates, was presented to the United Nations on November 17, 1960. This presented pertinent facts on population problems, such as that

two-thirds of the world's people were underfed, that the world population was increasing by 50 million per year, data on increases in life expectancy, and on the impossibility of supporting the population of 6 billion predicted by the year 2000 at the present rate of increase.

This statement then concluded:

Unless a favorable balance of population and resources is achieved with a minimum of delay, there is in prospect a Dark Age of human misery, famine, undereducation and unrest which could generate growing panic, exploding into wars fought to appropriate the dwindling means of survival.

And the statement urged that the United Nations—

. . . take the lead in establishing and implementing a policy designed to limit population growth the world over—in order that human beings everywhere may grow on a qualitative rather than on a merely quantitative level, and in order that they may be assured of the opportunity to develop their highest capacities, and to enjoy individual freedom, the advantages of education and public health, privacy, abundance, security, and the beauty and wonder of the world.

. . . BY THE U.S. GOVERNMENT

In 1963, as the result of a conference on the Population Crisis versus Peace and Progress, 19 Nobel laureates joined business leaders in a declaration that:

Clearly, the urgent, indisputable need today is for intensified action to declerate world population growth. Population trends must become central consideration in all national and international plans for health, economic development and world peace.

Therefore, as Americans, we most strongly urge the United States Government to adopt forthright policies which will permit the resources and skills of our Nation to be concentrated on the population problem. Our Government should assist other nations which request help of voluntary population control, and should intensify research for improved methods of regulating fertility—methods acceptable to peoples of diverse cultures, creeds and ways of life.

The declaration concluded:

The actions we suggest require that the timidities and conflicts of the past be cast aside. We appeal to all men to have faith that existing differences can be resolved, so that rapid progress can be made in checking excessive population growth, and so that children eveywhere may grow up in a world that offers the prospect of peace and progress.

. . . BY POPE PAUL VI

The most recent statement on this matter which was mentioned by Senator Gruening was signed by 81 Nobel laureates, 36 from the United States, and sent to Pope Paul in February 1965.

These actions by Nobel laureates are only illustrative of the deep concern of all scientists with this problem of population growth and control, as shown by the two comprehensive reports by the National Academy of Sciences, and the National Research Council, that of 1963 on "The Growth of World Population," and that of 1965 on "The Growth of U.S. Population."

It is as scientists, however, rather than as Nobel laureates, that Dr. Kusch, Dr. Richards, Dr. Szent-Gyorgyi, and I are here today to express our concern with this population problem, and to speak as individuals from the viewpoint of our various scientific disciplines.

"WE MUST GUARD AGAINST . . . A NEW DARK AGE"

May I lead off by speaking a little more specifically of some of the biological issues involved? Biologically speaking the evolution of man either biologically or culturally depends on the degree to which his genetic heritage can be expressed. Man is genetically endowed with the possibilities and potentialities of intellectual and physical development which are necessary for continued evolutionary improvement of man, his society, and his environment. These potentialities by themselves are useless unless they can be realized. The opportunities for this realization will be denied unless the world population can be kept in step with natural resources, with food, with shelter, and above all, with education and opportunity for intellectual development and expression and for exploration and understanding both of man himself and of his environment. We must guard against the alternative catastrophe of a new dark age characterized by the impossibility of continued intellectual, scientific, and social progress.

MAN'S ADVANCES IN GENETICS DEPENDENT ON FAVORABLE ENVIRONMENT

As a geneticist, I can point out the very great progress which has been made during the last decade or so in our understanding of the molecular basis of heredity. This understanding of molecular genetics, so-called, gives us hope of improving man's genetic heritage, as well as of eliminating or alleviating some of the ills to which he is now subject. Man can neither use his present genetic material and heritage effectively to gain new knowledge and understanding of himself, nor use this new knowledge to improve his genetic heritage, in an unfavorable environment such as would be inevitable with world populations out of balance with world resources and productivity.

FREEDOM OF CHOICE—IMPORTANT PRINCIPLE OF DEMOCRACY

Finally, and from another viewpoint entirely, I believe that one of the most important principles of democracy is the freedom of each individual to make his own choice of the conditions and circumstances of his life. Chief among these is freedom of choice in regard to the size and timing of his family, consistent with his ability to care for and provide a full life and opportunity for his children.

If those of us in the United States want democracy, and I believe in democracy and the principles thereof not only for us, but for all men throughout the world, we must, I am convinced, unite in supporting the goals we are here discussing.

Thank you.

Senator GRUENING. Thank you very much, Dr. Tatum, for a very cogent, pertinent, and useful presentation.

I wonder whether I could ask you one or two questions about the origin of this petition, this entreaty, to the Pope on the subject of altering the church's historic position on birth control.

Do you happen to know how it was organized, who initiated it, and what procedure was carried on to unite this very impressive number of Nobel Prize winners for this common purpose?

Dr. TATUM. I think, Senator, that it grew out of the recognition that this was indeed one of the major world problems, the feeling that

we were coming to a crossroads essentially, a point of decision on the part of the Catholic Church and its policies, and the tremendous concern which I have expressed earlier of Nobel laureates in this matter and the feeling that this was of sufficient urgency that if we could indeed address ourselves directly to Pope Paul and put, for whatever it is worth, the prestige of our united effort behind the request which was essentially to ask for utmost consideration of all of the factors concerned and to offer our assistance in any way possible.

I think this was the background.

The direct solicitation was undertaken in this country by myself and abroad by Sir Peter Medawar, and as the data indicate, this met with remarkable success and unanimity of response.

Senator GRUENING. I believe the extent of this support is extremely striking and extremely significant and I realize that presenting this as you did in February of 1965 must have required a considerable amount of correspondence and organization. To get in contact with 81 widely scattered Nobel Prize winners in a score or more of countries must have been a considerable undertaking in itself.

Dr. TATUM. Well, it was a very rushed enterprise and I think remarkably successful in the short time that we had.

Senator GRUENING. Can you tell me whether there was any acknowledgment or response from the Vatican?

Dr. TATUM. There was no official response except an acknowledgment of receipt of this communication. But as you remember, sir, the word of this request to the Pope was released to the press within a fairly short time after it had been received, and our guess is, without any substantiation, that this probably or possibly was released from the Vatican directly because they wanted this on record to aid, to support the efforts of the council in postponing an immediate decision and to induce or assist in serious and detailed and careful consideration.

Senator GRUENING. It would be useful if at this point you would include in your testimony the full text of the petition itself with a list of the Nobel Prize winners who signed it as well as pertinent newspaper clippings.

(The petition and one clipping follow:)

EXHIBIT 4

TEXT OF PETITION SENT BY U.S. NOBEL PRIZE WINNERS TO POPE PAUL VI, MARCH 18, 1965

We, the undersigned Nobel laureates, are deeply conscious of the immense burden of responsibility resting on the shoulders of Your Holiness in acting on the information and analyses of the commission you have designated to study the subject of population and fertility control. We extend our prayers and sympathies to Your Holiness and to the commission in this trying period leading to decisions that will affect the course of history, for all time and for all human beings, regardless of their religions. Sensitive as all thoughtful men and women must be to the ethical context in which marriage and the family should be viewed: we are increasingly impressed by the emerging consensus about the goals of family planning—namely, to assure each new infant the birthright of a warm welcome in a loving home, with a healthy opportunity for education, employment and fulfillment. The pressures of population growth now add a new moral imperative to the thoughtful consideration of family size. In recognition of the gravity of the issue and the inevitable worldwide consequences of your action on it, we wish to express to Your Holiness the hope that any decisions will be the fruit of the most profound and searching studies. To this end, we wish to offer Your Holiness the best of our professional capacities and endeavors.

EXHIBIT 5

AMERICAN NOBEL PRIZE WINNERS WHO SENT A PETITION TO THE POPE URGING THAT THE CHURCH RECONSIDER ITS STAND ON BIRTH CONTROL

John Bardeen, Physicist
Konrad E. Bloch, Biochemist
Felix Bloch, Physicist
Walter H. Brattain, Physicist
Melvin Calvin, Chemist
Owen Chamberlain, Physicist
Andre Cournand, Physician
Edward A. Doisy, Physiologist
Vincent du Yigneaud, Chemist
John F. Enders, Bacteriologist
Phillip S. Hench, Physician
Robert Hofstadter, Physicist
Edward C. Kendall, Chemist
Arthur Kornberg, Chemist
Willis E. Lamb, Physicist
Joshua Lederberg, Geneticist
Tsung Dao Lee, Physicist
Willard F. Libby, Chemist
Fritz Albert Lipmann, Biochemist
Maria Goennert-Meyer, Physicist
William P. Murphy, Physician
John H. Northrop, Chemist
Linus C. Pauling, Chemist
Edward Mills Purcell, Physicist
Isadore Isaac Rabi, Physicist.
Dickenson W. Richards, Jr., Physician
Frederick Chapman Robbins, Physician
Amelio Segre, Physicist
William Shockley, Physicist
Wendell M. Stanley, Biochemist
Albert Szent-Gyorgi, Biochemist
Harold C. Urey, Chemist
Selmen A. Waksman, Physiologist
James D. Watson, Biologist
Thomas H. Weller, Physiologist

EXHIBIT 6

NOBEL PRIZE WINNERS URGE POPE RECONSIDER BAN

[From the Washington Post, June 23, 1965]

VATICAN CITY, June 22 (UPI).—American and European Nobel Prize winners have asked Pope Paul VI to reconsider the Roman Catholic Church's ban on artificial birth control, it was disclosed today.

Msgr. Pio Laghi of the Vatican Secretariat of State said the plea was contained in two letters which the Pontiff passed on to his Special Commission charged with studying the delicate question.

Msgr. Laghi, who did not disclose the exact contents of the letters, said the Pope "took note" of them before passing them on to the commission last March.

According to other Vatican sources, both letters followed the same form and had been passed on to the Vatican by Msgr. Iginio Cardinale, Papal Nuncio to Britain. Papal Secretary of State Amleto Cardinal Cicognani acknowledged receipt of the messages in a formal letter to the Nobel Prize winners.

ED. NOTE.—The reader may be interested in referring to another article on this subject, "Nobel Laureates Petition the Pope," by John Cogley, New York Times, June 22, 1965, which appears as exhibit 6 in part 1 of the 1965 hearing records.

FREEDOM OF ACCESS TO INFORMATION

Senator GRUENING. Of course, there has not been as yet any affirmative action in response, but we do note a great relaxation in the general attitude toward discussion of this subject which, as you know—it is a matter of common knowledge—was very largely taboo until, oh, a matter of a year or two or even a few months ago. Now at least the subject is open for the fullest discussion which I believe is a great gain because, after all, what we are seeking here is an exercise in freedom—freedom of the mind, freedom of information, freedom for people who desire this information to have access to it. This discussion would have been extremely difficult in the atmosphere which existed until very recently. There are still States in which the dissemination of this information is forbidden by law. Until recently public attitude was that this was a subject which should not be properly discussed. It was classed with the obscene and with the improper, quite unwisely, but I

believe that situation has very largely disappeared or is on its way to disappearing, and so that is a very substantial gain.

PURPOSE OF HEARINGS: TO MAKE INFORMATION AVAILABLE

And it is evident from our hearings that there is a great demand for this information and, as you know, the purpose of our legislation is not to force this on anybody but simply to make it widely available, to pass it on to those who we know, from past experience and from studies, desire to have access to it.

I will direct that there be placed in the record an article which reviews current developments in the population field, developments which points out that many people overseas are desirous of receiving and utilizing any information which will assist them in their efforts to plan their families and thus the quality of their lives. This article appeared in the January 1966 issue of the Population Council's Bulletin, "Studies in Family Planning," a copy of which Bernard Berelson, vice president of the Population Council, thoughtfully sent to the subcommittee. In this same issue is an article discussing the results of a poll conducted for the Population Council by the Gallup Organization, Inc., a poll which does much to confirm the view of this subcommittee that the American public is indeed aware of the population crisis, and supports the dissemination of requested information.

These articles suggest that public opinion, both at home and abroad, supports a positive role by our Government in the field of population control.

(The articles referred to follow:)

EXHIBIT 7

RECENT EVENTS IN POPULATION CONTROL

(Prepared by Dr. John A. Ross, Studies in Family Planning, a publication of the Population Council, No. 9, January 1966)

No single year has seen as many forward steps in population control as 1965. Effective national programs have at last emerged, international organizations have decided to become engaged, a new contraceptive has proven its value in mass application, new sources of funds have appeared, additional nations have cast off their earlier timidity, and surveys have confirmed a popular desire for family limitation. These developments represent important progress toward changing the course of fertility. The missing link remains a proven fertility decline resulting from deliberate effort, but that may well appear in two or three populations by the end of 1966.

An accounting of notable events must begin with Korea and Taiwan. For the first time in family planning history, two programs are running on a countrywide basis and are doing well at it. Taiwan's program is not yet 2 years old, and already it has inserted 1 IUD (intra-uterine device) for every 12 women in the childbearing years, or about one for every 4–6 target women (those who are not pregnant, lactating, already sterile, already using contraceptives effectively, or desirous of more children). Korea has done almost as well, and until recently had performed substantial numbers of vasectomies. In both countries, the monthly rate of insertions has reached approximately five per 1,000 women in the childbearing ages, a remarkably high figure. It represents, on an annual basis, 12–18% of the target women. Funds to continue this level of activity have been allocated for five years in Taiwan, and are in little doubt in Korea.

The Korean effort is an official one; it has expended larger per capita sums than any other government through the end of 1965. Taiwan's activity is not fully official; as one consequence, mass media are not being used in the program. Funding, however, comes through the Taiwan Economic Planning

Board, which uses interest on U.S. counterpart funds to underwrite the program. In late 1964, the Economic Planning Board approved an omnibus ten-year health plan, of which family planning was an integral part. Financing is assured for five years at 2.5 cents per capita per year.

Korea and Taiwan strengthen the contention that good administration is now the key ingredient for successful programs. Korea has put 2,200 full-time workers into the field (one per 2,200 women in the childbearing ages). It has reached operational levels for a network of IUD quotas, supply lines, local manufacture of contraceptives, training of hundreds of M.D.'s and nurses, and mass propaganda. Taiwan is showing the way in another indispensable feature of effective programming: evaluation. With a 30-day lag, administrators know performance down to the individual worker, compared against target and against last month's record. Taiwan also pursues evaluation through a series of small programming experiments, to move toward better cost-effectiveness levels. These experiments have tested the practicability of such plans as offering free IUD coupons good "for a limited time only," distributing pills by mail, varying the ratios of group meetings to home visits, and utilizing familiar people on a fee basis as sources of diffusion.

Korea and Taiwan are numerically small and their experience may not fully apply to the great Asian masses. Nevertheless, they *are* part of the problem, and as examples they are invaluable. Others look to their experience in training and organization, in response patterns to the IUD, and for reassurance that the job can be done. Together with Hong Kong and Singapore, they should soon demonstrate that deliberate effort can reduce fertility.

ELSEWHERE IN ASIA

India and Pakistan must figure prominently on any balance sheet of progress, representing as they do one-fifth of the world's population. After several discouraging years, each country revitalized its program this year. Large new budgets have been authorized for use in carefully drawn new Plans. These Plans involve much that is new, but they also integrate the pilot projects, skilled workers, and infrastructures produced by past efforts.

In the past twelve months, India:

1. Invited two expert commissions to evaluate its program, one from the World Bank and one from the U.N., and conducted an independent assessment itself.

2. Approved the IUD for mass use (after a year of tests), then built a much enlarged national program around it, and received 600,000 IUD's from the Population Council, with 400,000 more to come. India has started local manufacture of the IUD in a new factory in Uttar state.

3. Budgeted two hundred million dollars (8.3 cents per capita) over the five years starting April 1, 1966. This is considerably more per person than in the successful Korean and Taiwan programs, but India in the past has left well over 50% of its family planning budget unspent.

The first year's goal is one million IUD insertions, with twenty million planned over the five years. The Five-Year Plan also anticipates five million vasectomies and ten million *effective* users of traditional contraceptives. The yearly number of births-prevented, according to the Plan, is expected to be nine million by 1975.

Pakistan has also decided to upgrade its efforts. Ayub Khan's government has long had an official family planning program, budgeted at about one cent per capita. Progress has been slow, with no perceptible change in the birth rate. As of July 1, 1965, Pakistan adopted a 300,000,000 rupee (twelve cents per capita per year) five-year plan reorganizing the family planning directorate. President Khan has elevated the program to near-cabinet status, making it a full sector in the new Plan and putting it in the hands of an experienced civil servant, Enver Adil.

Insertion of IUD's by midwives will be permitted where M.D.'s are scarce, but under medical supervision. Incentive payments will be made to local midwives for referrals and insertions. Pakistan is not tied to the federal system as closely as is India, and there is clear stress on the chain of command that has been an effective factor in the Korean program. Priorities are spelled out, to avoid the perils of doing everything at once. The estimated expenditure per person for five years is higher by half than in India.

In Thailand, a baseline survey (Photharam area) has shown that 70% of rural women want help with family planning and 91% approve government

provision of such help. (See Studies in Family Planning, No. 8, October 1965). The offer of contraceptives in this area received a strong response. Within eight months, one-fifth of the eligible women (married and under age 45, excluding those pregnant, nonfecund, and sterilized) had accepted; and 40% were expected within 18 months. This per capita acceptance rate was even higher than in the early Taiwan (Taichung City) program. Interest in urban Thailand is suggested by events at the Chulalongkorn University hospital in Bangkok. The unpublicized offering of IUD's there set in motion a word-of-mouth communication chain that produced over 6,000 insertions in seven months.

As for the Philippines, in February 1965 ten of the staff members of the Manila Health Department were sent to Singapore and Taiwan for training. Upon their return they immediately trained 80 doctors and 12 nurses. By June, 250 student nurses had been trained. Several thousand IUD's have now been inserted in Manila. In late July, a health department member was appointed Director of Family Planning. Since then, ten health centers located in strategic districts of Manila have received family planning equipment, and similar plans have been made for the other 31 city health centers.

The government of Malaysia recently decided to implement a national family planning program. Budget proposals are now under consideration.

THE MIDDLE EAST AND NORTH AFRICA

Turkey: For decades Turkey had an anti-contraceptive law. In spite of this, the Economic Planning Board began working in the early 1960's toward legislative changes and program planning. This farsightedness saved valuable time when government policy shifted. In early 1965 Turkey:

repealed the old laws forbidding abortion, sterilization, and the import and sale of contraceptives or the dissemination of information about them.

passed a Family Planning Law, to implement a national program through the Ministry of Health and Social Assistance, with cooperation from the Army and other government agencies.

began implementation of the program, by clinic tests and training of personnel, preparatory to launching of field activity.

Direct expenditures for family planning in 1965 stand at 2.2 cents per capita (6.0 million TL) and there are sizable indirect expenditures. The budget will rise under the Plan to 5.5 cents per capita per year. Popular approval of contraception and of governmental involvement has been clearly established through a landmark survey of over 5,000 married persons in 240 villages and 70 larger centers. (See Studies in Family Planning, No. 5, December 1964). USAID is considering a proposal to provide large numbers of vehicles to Turkey for both family planning and an extensive rural health program.

Tunisia: Among North African countries, Tunisia is easily the most advanced in population control. It is the first Arab and first North African country to declare a national family planning program. It is also important as another Moslem nation choosing to engage in a serious level of action. For two years an experimental program has been in progress, involving pilot studies and an initial IUD experiment. The Ford Foundaton has collaborated on financing and basic planning. In July the government announced that an official national program will start on January 1, 1966. Family planning activities are being added to existing medical installations, toward the objective of inserting 60,000 IUD's per year, or one IUD per year for every 12 women in the childbearing years. This ambitious target, if achieved, would have the approximate impact of reducing the birth rate over one-quarter in five years. The seriousness of the program is further indicated by a new law that permits abortions for women with over four children. Tunisia's program may have effects beyond its own borders, as did Taiwan's. Morocco, for example, is watching the Tunisian experience closely.

The United Arab Republic: Egypt continues an active interest in population matters, though substantial government action is still awaited. A number of clinics offer information and services, and local manufacture of IUD's is anticipated in the near future. A request has been made for 50,000 IUD's and for the molds to make more. Private individuals and groups are at work; and conditions would seem agreeable for a government dicision to execute President Nasser's frequent pronouncements on population problems in Egypt.

All in all, the Middle East and North Africa show encouraging developments, considerably more than was typically anticipated a few years ago.

Africa below the Sahara: Two governments have taken steps of interest. In April, Kenya requested that the Population Council send a Technical Mission to assess population problems there and suggest guidelines for the formulation of national policy. The Mission was well received, talked extensively with Cabinet ministers and the Economic Planning Board, and found a broad appreciation of the need for a low growth rate. The Mission was able to estimate that the savings to the government in reduced maternity care expenditures alone would equal or exceed costs of a fertility control program.

Ghana now has a continuing committee answerable to the Presidential Office, which has functioned sufficiently to make its first recommendations. These have to do mainly with regular demographic inquiry, the usual forerunner to closer awareness of population problems. An independent survey in Ghana shows public attitudes consistent with fertility regulation.

These developments came as a surprise to most observers. Africa below the Sahara has been repeatedly listed as the region least likely to take serious action in population matters. A recent survey of African countries finds considerably greater official readiness than had been suspected. J. C. Caldwell, of the Australian National University, has studied public documents and directly contacted African governments, and has replies covering about 40% of the continent's population. Most nations are found not to be pro-natal, and several state openly that they are not interested in population expansion. They all believe firmly in economic and health planning by government: Caldwell believes they entertain fewer doubts about government guidance of development than do new nations on any other continent. Since infant mortality is declining rapidly enough to make growth quite troublesome to their economic plans, there is some reason to expect a quickening interest in fertility reduction. Ex-British areas have a legal heritage favorable to family planning, and ex-French areas are likely to take a pragmatic view toward the anti-contraceptive laws they have inherited and will repeal them when self-interest so indicates. Meanwhile, private family associations are by no means absent; they exist quite widely and report lack of finance to be their main hindrance.

LATIN AMERICA

In Chile especially, developments are proceeding at a rapid pace. A voluntary National Committee is officially backed by the National Health Service, which contributes such personnel as doctors, nurses, and midwives. Services are offered to much of the Santiago population; IUD research is extensive, and almost all Santiago public hospitals now offer birth control supplies. The Catholic University Hospital carries forward a careful project on oral pills and the rhythm method. As in other Latin America cities, illegal abortion is serious, causing widespread maternal deaths and using substantial hospital resources. It is estimated that in Chile one abortion occurs for every two births, and that two-thirds of the approximately 130,000 abortions each year are criminally induced. Abortion is probably the foremost method of birth control throughout Latin America and, indeed, on other continents as well. The consequent concern within the medical profession has been an important stimulus behind liberalized attitudes toward contraception.

In August, a Pan-American Assembly on Population was held in Colombia, where Church leadership has been quite conservative. The meeting was sponsored by the Colombian Association of Medical Schools and clearly produced a successful and helpful exchange. Three-quarters of those attending were Latin Americans, at a conference that would have been impossible three or four years ago. An ex-President of Colombia forcefully advocated measures to control population. Colombian priests took an active, informed part in the discussions, and newspapers gave full coverage to the meeting. The conference resolutions were almost startling in their liberality, saying in part that "governments, through their appropriate ministries, should make family planning services accessible to people who desire them, and educate the people to their availability."

In other developments, Colombia is establishing two demographic research and training centers. A Catholic Action group in Bogota is preparing a film on Latin American population problems, and the eminent Colombian Association of Medical Schools has established a population unit within its organization.

In San Salvador, field work on a fertility study has been completed, the first such program sponsored by a policy-making government agency in Latin America, and Ecuador is conducting a similar investigation. A coordinated fertility survey

has been completed in seven Latin American cities, using closely similar questionnaires. Barbados has begun a major IUD investigation, and the government there is actively interested in the difficulties caused by an extremely high density of population. Two nations, Peru and Venezuela, decided during 1965 that they would establish population units within their Ministries of Health.

We conclude that in each region of the world, developing nations and private agencies are moving forward at a surprising pace. The same picture appears when we examine recent actions by international agencies and by governments of the already-developed countries.

THE UNITED NATIONS

Certain member agencies of the U.N. have reached notable decisions regarding their positions on population.

The WHO resolution: On May 21, the 18th Annual Assembly of WHO unanimously approved a resolution empowering the Organization to give assistance to its members on population programs, short of actually engaging in "operational activities." Assistance is permissible in improving fertility control methods, in reference services, and in health aspects of population dynamics. This ends a ten-year period of inaction on population, caused by disagreements on an Indian request for a consultant on birth control.

The Economic and Social Council voted in July, 1965, to offer technical assistance for birth control. Denmark, Iraq, and India won support for strengthening a draft resolution, so as to request the U.N. Secretary General to provide advisory sevices and training on action programs in the population field when asked to do so by member nations.

The UNICEF Governing Council has requested its director to prepare a statement on possible UNICEF activities in the population field. This is the same kind of step taken by WHO a year ago, which presaged its later action.

The U.N., in addition, organized a Mission at India's request to examine her family planning program, which went at the same time as a similar Mission of the World Bank. It also sponsored, this September, the large World Population Conference in Belgrade and continues its support of demographic investigations and its extensive publication program in the population field. It supports three regional demographic centers: in Bombay, Cairo, and Santiago.

Elsewhere in the international picture, the Ministry of Overseas Development in Great Britain (counterpart of U.S. AID) has recently announced its interest in assisting population programs. The Swedish International Development Authority has of course long been active, most notably in Ceylon and Pakistan.

THE UNITED STATES

With his State of the Union address on January 4, President Johnson opened a year of sweeping changes in federal policy. He said, "I will seek new ways to use our knowledge to help deal with the explosion of world population and the growing scarcity of world resources."

Soon thereafter several agencies took important actions:

1. The Anti-Poverty Program almost immediately announced assistance to a fertility control project at the community level, in Corpus Christi, Texas. At this writing eleven cities have received such grants, generally at a few thousand dollars each, and a dozen more applications are in process.

2. In February, an airgram went to all AID Missions abroard and all U.S. embassies instituting a liberalized policy on population assistance. AID has instructed each of its Missions to have one officer responsible for knowledge about population problems in the country concerned. AID will entertain requests for technical assistance, for such items as vehicles and educational equipment and for assistance in local currency financing. As of now the Agency will not provide contraceptives nor devices for their manufacture, arguing that these are not difficult to obtain elsewhere.

3. The Children's Bureau took its first major steps toward support of family planning activity. By September of 1965 it was financially involved in research, training, and service programs. (a) Research through a grant to the University of Chicago Community and Family Study Center pursued such questions as, "Why do some low-income families reject family planning or accept it only on a limited or temporary basis?" (b) Training in family planning techniques is partly projected through a course for nurses from foreign countries as well as

from the U.S. In other programs, physicians and nurses are trained in new contraceptive techniques, partly through the Federal funds that support state Maternal and Child Health programs. (c) Service projects are supported through the flow of Federal funds to the states, 27 of which are giving family planning services through material health programs. During fiscal year 1965, about $1,835,000 of pooled state-Federal money was spent in this way.

4. Secretary Udall brought the Department of the Interior into the picture on June 19, making it the first Federal agency to offer direct birth control advice and services, including contraceptives. He pointed out that many of the Department's charges were being deprived of opportunities available in metropolitan communities and said the Department would offer these services through its established health clinics to American Indians, natives of the Pacific Trust Territory, and Eskimos, Indians, and Aleuts in Alaska.

5. In research, the U.S. Public Health Service is supporting over 380 grants, valued at $7,000,000, relating to human reproduction.

6. President Johnson in June stressed the urgency of population control to the United Nations. Speaking on its 20th Anniversary, he said, "Let us in all our lands, including this land, face forthrightly the multiplying problems of our multiplying populations and seek the answers to this most profound challenge to the future of the world. Let us act on the fact that less than five dollars invested in population control is worth a hundred dollars invested in economic growth."

Three months later he transmitted a message to the World Population Conference at Belgrade, saying in part:

". . . Our Government assures your Conference of our wholehearted support to the United Nations and its agencies in their efforts to achieve a better world through bringing into balance the world's resources and the world's population.

"In extending my best wishes for the success of your Conference, it is my fervent prayer that your great assemblage of population experts will contribute significantly to the knowledge necessary to solve this transcendent problem. Second only to the search for peace, it is humanity's greatest challenge. This week, the meeting in Belgrade carries with it in its work the hopes of mankind."

Although the President and the executive agencies led the way, the other two branches of government were also involved. On June 7 the Supreme Court struck down Connecticut's anti-birth control law on grounds of the right of privacy, and in so doing encouraged New York to radically liberalize its analogous law. In Congress, ten bills relating to population control were introduced before June 15. Hearings on Senator Gruening's bill have attracted wide note, focusing attention on the issue and putting valuable testimony on record. Former President Eisenhower submitted a letter stating that his earlier opposition to government involvement had been mistaken, and that he now emphatically endorsed government entry into the population control field.

It is estimated that two years ago there were 450 public birth control clinics and that now there are 700. In 1963, a total of 11 states had tax-supported programs; now 33 states and the District of Columbia either have or will have public birth control clinics serving 200,000 medically indigent women.

In the private sector, the American Medical Association changed its neutral policy with a new declaration, the first since 1938, saying that ". . . the prescription of child-spacing measures should be made available to all patients who require them, consistent with their creed and mores, whether they obtain their medical care through private physicians or tax or community supported health services." Labor union participation in this field appeared for the first time. The 19,000-member Amalgamated Laundry Workers of New York City now provides free information and devices, through its health center program. The press expanded its already gratifying coverage of all population topics. Most notable was the television series by National Educational Television. NET produced six hour-long films for its 91 affiliated stations, covering Japan, Brazil, Europe, the U.S., India, and reproductive physiology. In May, the National Academy of Sciences published a second report on population. It states that "family planning should be an integral part of public health programs"; that those agencies responsible for welfare programs should "include instruction in effective family planning"; that the medical profession should regard birth control advice as an integral part of all pregnancy and post-delivery care; and that the Federal Government should be increasingly involved toward helping Americans have only the children they want.

THE ROMAN CATHOLIC CHURCH

Last year Pope Paul VI described the population matter as an extremely grave problem. Early in the summer of 1964, the Pope's special Commission to study overpopulation and birth control was appointed. In the third session of the Vatican Council in October, several high-ranking prelates challenged the Church's present position and asked for a new examination of the problem.

In June of 1964, a special issue of Commonweal appeared on "Responsible Parenthood." Widespread questioning throughout the Catholic world was apparent, and some of the accustomed opposition to family planning efforts was disappearing. Polls continue to show favorable sentiment among Catholics toward family planning. In January 1965, for example, the U.S. Gallup Poll reported that 78% of Catholics interviewed supported the dissemination of birth control information to any who wanted it. This was an increase from 53% in a June 1963 poll. A combined national sample interviewed before and after Pope Paul's October U.N. visit (see report in this issue) showed 56% of Catholics and 53% of non-Catholics saying that the Church should ease its disapproval of contraception. Favoring Federal aid to states and cities for family planning were 59% and 65% of Catholics and non-Catholics, respectively. For Federal aid to other countries the figures are 55% and 59%.

We may perhaps anticipate the future course of Church-state relationships in population control by examining Latin America. There, effective study and action projects are multiplying, and government involvement is accelerating. Discussion concerning religious influences on fertility perhaps unfairly singles out Roman Catholicism: though it is alone in possessing anti-contraception doctrines, it probably has no more influence in the general fertility picture than Islam, whose customs and values favor large families.

MAJOR CONFERENCES

This year has seen three significant conferences on population and family planning: the World Population Conference (Belgrade), the First Pan-American Assembly on Population (Cali, Colombia), and the International Conference on Family Planning Programs (Geneva). The Geneva meeting brought together nearly 200 of the top administrative and research people actually engaged in population control. They exchanged experiences based on differing populations, programming methods, and contraceptive techniques. Representatives came from many specialities, from governments, universities and foundations, and from five continents. Special attention was given to new contraceptive advances and to field methods of executing programs. This was the first family-planning conference where it was possible to compare several national field programs as well as numerous smaller activities. As participants carefully reviewed progress during the past few years, there was constant surprise at the pace of developments. Five years earlier, a similar, smaller conference had speculated on probable future events. It was wrong in underestimating the growth of programs but it was right in anticipating that the dependency burden of children would continue to undermine economic development. The field has indeed progressed impressively, but deliberate action has not yet produced visible declines in birth rates.

SUMMARY

A survey of the past year or so shows a rising level of action and a marked increase of activity by various governments. It shows remarkable movement toward the legitimation of population control, as one eminent body after another gives its endorsement and contributes its resources. While the period of planned fertility decline has not begun, there has been a minor explosion of constructive developments.

The universality of developments is symptomatic. There is no central direction to the growth of family planning activities, yet they are ever more common. They continually appear at separate and unpredicted locations over Africa, Latin America, and every part of Asia. They are enlarging within each major religion and culture. Governments go beyond the endorsement of family planning; they allocate scarce personnel and foreign exchange to it. Such breadth of appeal suggests that the movement is grounded in fundamental aspects of modernization and that it will persist indefinitely. In these respects it is like economic development and, like it, the central question is whether enough can be done quickly.

EXHIBIT 8

AMERICAN ATTITUDES ON POPULATION POLICY

(A survey sponsored by the Population Council and conducted by The Gallup Organization, Inc.)[1]

In fall 1965 the Population Council sponsored a survey of American attitudes on population policy. The survey was conducted by the Gallup Organization, Inc., and consisted of two interview waves with identical questions. The respondents were selected as a modified probability sample, with 1571 cases in the first wave (in the field September 15–22) and 1634 cases in the second wave (October 6–14). Unless otherwise indicated below, the two waves are combined in this report, and the results are based on a "times-at home" weighting designed to improve sample representation.[2]

The questionnaire, made up completely of checklist questions, was initially formulated by John F. Kantner, then on the staff of The Population Council and now Chairman of the Department of Sociology at the University of Western Ontario. The following report, prepared by Bernard Berelson of the Council, presents all the questions used in the survey and thus shows the kinds of information that can be secured in this way. The same questions may be asked in a similar survey one or two years hence in order to develop trend data on these matters.

THE TOTAL SAMPLE

"Can you tell me about how many people there are in the United States?"

	Percent		Percent
Under 50 million	8	200–224 million	9
50– 99 million	6	225–749 million	8
100–149 million	8	750 million and over	8
150–174 million	10	Can't say	21
175–199 million	22		

At the time of the interview, the correct figure was about 193 million, so only about one in five respondents named the right category. If the range is broadened to, say, 25 million on either side of the right figure, the proportion correct is only about one-third of the total sample. Furthermore, of those providing a figure, just over half responded only after the probe: "Can you make a rough guess?" In other words, only one in three gave a number in response to the initial question. Of them, about half gave the right answer, as against only one in seven of those guessing.

"If our population continues its present rate of growth, how many years will it be before it is twice as large as it is now?"

	Percent		Percent
10 years or less	15	61–75 years	3
11–25 years	27	76–100 years	4
26–44 years	16	Over 100 years	3
45–60 years	15	Can't say	17

[1] Studies in Family Planning, a publication of the Population Council, No. 9, January 1966.

[2] The "times-at-home" method for adjusting survey data for persons not at home when the interviewer calls is based on the fact that in any sample using a single call the people reached can be grouped in terms of the extent to which they are usually at home. Some persons tend to be at home most of the time, some part of the time, and some infrequently. If groupings based on how frequent they can be found at home are made, then within each group or stratum we have a sample of persons who are homogeneous in this respect. Also we know that the people infrequently at home are under-represented and those at home most of the time are over-represented. This can be corrected if we have some measure of how often they are to be found at home. We can weight by the reciprocal of the fraction of time they are home. The measure adopted for classifying people in these terms is how many days they have been at home in a given number of days previous to the day the interview takes place, and at the same time of day. In the case of this survey the question was asked concerning three previous days. This combined with the day of interview provides information on four days. Weighting on the basis of this information is theoretically equivalent to four calls with regard to having a sample equivalently weighted by times-at-home groupings.

In this case, the correct answer at the time was just over 50 years, the category for which only a few people were able to give. Here too, slightly over half the respondents were guessing, this time after two probes. Of those "not guessing," only 13% gave the right answer. In short, people simply do not know the answer to this question and when they guess, they make the growth far faster than in fact it is.

"Here are some countries that have different rates of population growth. After each one, tell me whether you think it is growing faster, slower, or about the same as the United States?"

[In percent]

	Faster	Slower	About same	Don't know
Brazil	30	23	18	29
England	9	41	29	21
India	66	8	7	19
Japan	57	10	15	18
U.S.S.R.	30	16	30	24

Here again, nearly half of those giving an answer were guessing, after a probe, and nearly one-fourth were not even willing to guess. In general, people are right on India and England, wrong on Japan, and doubtful on the others, but only a few really know this comparative picture.

"What about the rate at which the U.S. population is growing? Do you feel this is a serious problem or not?"

"Do you consider the rate of growth of world population as a serious problem or not?"

[In percent]

	United States	World
Yes	54	62
No	39	28
Don't know	7	10

So the "population problem" is appreciated by a majority of Americans, but about a third of the people have yet to be persuaded. More people believe that population is a serious problem abroad—but not a great deal more. Note here and following that the "don't know" percentage on attitudinal questions is far below the "don't know" figure for the preceding informational queries. As with other such matters on the American scene, general conviction outruns specific information.

(If yes) "Which do you think is the more serious problem— population growth or_____in the United States?"

[In percent]

	Population growth	The other	Both same	Don't know
Crime	20	67	11	2
Racial discrimination	28	56	11	5
Poverty	32	42	21	5

READ: 20% think population growth is more serious than crime, 67% think crime is more serious than population growth, 11% think they are equally serious, and 2% don't know. So population growth is well behind crime and race problems, and nearly even with poverty (with which it is probably seen as intertwined).

(*If yes*) "*Which do you think is the more serious problem—the growth of world population or*_____?"

[In percent]

	World population growth	The other	Both same	Don't know
International communism	19	71	6	4
Threat of nuclear war	29	62	7	2
Aid to backward nations	45	33	10	12

READ: 19% think that world population growth is more serious than international communism, 71% think international communism is more serious than population growth, 6% think they are equally serious, and 4% don't know. Here again, the world's population problem is seen as far behind communism and war, but somewhat ahead of social and economic aid. Even so, note that nearly one in three puts the population problem ahead of the threat of nuclear war.

"*Do you believe that information about birth control ought to be easily available to any* married *person who wants it?*"

". . . *to any* single *adult person who wants it?*"

[In percent]

	Yes	No	Don't know
Married	84	10	6
Single	50	43	7

There are three main points: (1) overwhelming support for providing birth control information to married people, (2) nearly an even split on providing it to single persons, and (3) very few don't knows.

"*Do you feel that the United States Government should give aid to states and cities for birth control programs if they request it?*"

"*Do you think our Government should help other countries with their birth control programs if they ask us?*" (*If yes*) "*Would this include furnishing birth control supplies?*"

[In percent]

	Yes	No	Don't know
Aid to States and cities	63	28	9
Aid to other countries	58	34	8
(If yes) Supplies	62	31	7

Note that (1) a firm majority favors the provision of such aid—nearly two-to-one on both questions, combined; (2) there is not much difference between aid at home and abroad, but the edge goes to domestic help; and (3) of those approving foreign aid, a good majority also approve the furnishing of birth control supplies—though that is a minority of the total sample. (Present AID policy allows the provision of technical assistance on family planning but not supplies.)

"*The Roman Catholic Church does not approve many methods of birth control. Do you believe that the Church should change its position on this matter?*"

	Percent
Yes	54
No	24
Don't know	22

A clear majority is favorable—over two-to-one of those giving their position. The high "don't know" for an attitudinal question is accounted for mainly by non-Catholics (Catholics 11% don't know, non-Catholics 25%)—probably attributable to lack of information as well as the outsider's reluctance to judge another's policy, and consequently his deference thereto.

SOCIAL DIFFERENTIALS

The social differentials that matter are few—mainly sex, education, and religion.

On the informational questions, the educated do much better, and men do a little better. For example, here are the percentages who are correct about the size of the U.S. population:

	Percent
Grade school	13
High school	21
More than high school	36
Women	13
Men	32

The educated also do considerably better on the country comparisons, but not the men.

On the attitudinal side, here are the major differences:

BY SEX: Among those who consider population to be a serious problem (roughly equal between men and women), men are somewhat more likely to stress population in comparison with the other problems. The only other difference by sex comes on the provision of contraceptive information to single persons: 57% yes from men, 42% yes from women.

EDUCATION matters on most questions:

[In percent]

	Yes to U.S. problem serious	Yes to world problem serious	Give information to married
Grade school	51	54	75
High school	54	62	88
More than high school	58	76	92

[In percent]

	Give information to single	Federal aid to States and cities	Federal aid to other countries	Roman Catholic Church should change
Grade school	39	58	45	40
High school	51	63	59	56
More than high school	63	66	74	68

Note that the slightest differences appear on the two questions in which the uneducated (i.e., the poor) have a personal stake—the U.S. problem and Federal aid to the states and cities.

And here are the major attitudinal differences by RELIGION:

[In percent]

	Yes to U.S. problem serious	Yes to world problem serious	Give information to married
Catholics	44	60	81
Non-Catholics	57	64	86

[In percent]

	Give information to single	Federal aid to States and cities	Federal aid to other countries
Catholics	43	59	55
Non-Catholics	52	65	59

On every question, the Catholics are less persuaded—but for the most part only slightly so. Incidentally, this is not simply a reflection of the Catholics' lower education: on every educational level the Catholics show such differences relative to the non-Catholics.

Finally, here is the response to the question about Catholic policy:

[In percent]

	Catholics	Non-Catholics
Church should change	56	53
Church should not change	33	22
Don't know	11	25

The Catholics themselves strongly favor a change, and they are far less undecided. Actually, Catholic opinion on this matter is quite homogeneous except for the elderly. Among Catholics from their 20's through the 50's, the percentage favoring a change varies only between 58% and 62%, but of those age 60 and over, only 39% are for a shift in the Catholic position.

By a chance in timing, the two waves of interviews were held around the Pope's appearance at the United Nations on October 4, on which occasion he observed that "your task is to ensure that there is enough bread on the tables of mankind and not to encourage artificial birth control, which would be irrational, in order to diminish the number of guests at the banquet of life." Did that statement have an important impact on the attitudes of American Catholics? The evidence is not conclusive, partly because of sample size, but there is perhaps a suggestion that the Pope did influence some Catholic opinion, at any rate directly after the event. More Catholics and non-Catholics too, appeared to believe that the population problem was serious in the second wave but fewer favored the indicated policies—but only by five percentage points or less in most cases. However, on two central questions—whether the Church should change its position and whether the Federal Government should help other countries with birth control programs—Catholic attitude seemed to move somewhat more from before to after the Pope's statement.

	Catholics		Non-Catholics	
	Before	After	Before	After
Church should change—percent	58	55	55	52
Church should not change—do	29	36	20	23
Don't know—do	13	9	25	25
Government should aid other countries—do	60	51	62	56
Government should not aid other countries—do	31	41	31	35
Don't know—do	9	8	7	9
Total number of cases	407	374	1,127	1,238

Both Catholics and non-Catholics were less favorable after than before but the Catholics' position moved somewhat further—though on balance it is still on the favorable side. These differences generally fall within normal errors for samples of this size so no firm answer can be given, but the data do suggest that the Pope's statement had some effect on these questions.

It must, of course, be borne in mind that this measurement was taken immediately after the event and does not indicate what lasting impact the occasion may have made upon American opinion with regard to population policy.

EISENHOWER RECOGNIZES GOVERNMENT RESPONSIBILITY

Senator GRUENING. We are making substantial progress, particularly in view of the fact that former President Eisenhower, as you know, has reversed his former position which was that this was not a

matter in which the Government, Federal Government, should become involved. He now feels that the Government has a responsibility here.

Although it is clear from the course of these hearings, I would like to emphasize again that while we have much to learn in the area of population control, we do already have a great deal of knowledge about many aspects of the problem, knowledge which we could share. I will at this time place in the hearing record a pamphlet describing the wide variety of research and training at the Population Studies Center of the University of Michigan. With this pamphlet I will include some of the reports of studies which are the work of members of the faculty of this university.

I will also place in the hearing record a speech by Dr. Ronald Freedman, director of the Population Studies Center at Michigan University, which he gave as Moderator at the United Nations World Population Conference in Belgrade last year. Dr. Freedman says much about how, when, and to whom the knowledge that we do have about family planning can be most fruitfully disseminated in developing nations. The subcommittee is grateful to Dr. Freedman for making this material available.

(The items referred to follow:)

EXHIBIT 9

EXCERPTS FROM THE REPORT OF THE UNIVERSITY OF MICHIGAN POPULATION STUDIES CENTER FOR THE PERIOD FROM MAY 1, 1964 TO JUNE 30, 1965

The Center is completing its third full year of operation under a basic supporting grant from the Ford Foundation. With additional support from the Population Council and other sources, the program has been well established in three major areas: student training, research, and assistance to demographic studies in developing countries.

TRAINING AND FINANCIAL ASSISTANCE FOR STUDENTS

A primary purpose of the Center is to facilitate graduate training in Population and Human Ecology. This is done in a variety of ways: by providing financial support for students; by involving students in on-going research projects; by providing financial support and facilities for dissertation research; and in other ways.

During the current fiscal year, thirty-two different students received some type of financial assistance from the Center, an increase from twenty in the preceding year. We expect the total number to be about thirty-three next year on the basis of commitments made so far. . . . The assistance varied greatly both in kind and in amount. Twenty-four students received tuition grants at some time during the year. Twenty-five students received some type of stipend or fellowship not requiring a specific work commitment. Twenty-two students earned hourly or monthly wages by working on Center projects. Seven students received other kinds of direct financial aid for their research in support of field work, IBM costs, purchase of data, etc. Obviously, these are overlapping categories. The typical student receiving aid from the Center had tuition scholarships for one or more terms, received some direct support in the form of a fellowship and also worked at some time for wages. All together 15 continuing students and 17 new students received one or more of these types of assistance. These do not include students who received no direct financial assistance from the Center but who benefited in various other ways; consultation with the staff, participation in the weekly "brown-bag" informal seminar, use of Center equipment, etc. Each year, a number of the students are supported by fellowships from the Population Council or the Ford Foundation, by teaching fellowships, University Fellowships, or in other ways. In some cases the Center supplements these awards.

An important feature of our program in the last two years has been to make it possible for students to continue their training intensively in the summer months. Our objective is to shorten the total number of years in training and also to deepen the training. With the new University trimester calendar, we have more students involved in Center activity in the new spring and summer terms which overlap the old summer session. Twenty-six students were participating in some aspect of the program during the spring term of 1965 (May–June) and we expect to have about 25 in the summer term (July–August, 1965).

While the major support for graduate students comes from our Ford grant, there are a number of other important sources of support; for example, Population Council fellowships, work on sponsored research projects at the Center, and University fellowships. The flexibility of the Ford funds is of the greatest importance. It means that we can guarantee students continuing support, although often we do not need to draw on the Ford money for particular students who win other sources of support in due time. Often a scholarship from the Ford funds is combined with other sources of support, or we may supplement a University fellowship with a modest amount to bring the stipend up to an appropriate level.

Twelve graduate students (from six foreign countries) with special interest in population studies have been in the graduate sociology program or in the Center program during the current year. Nine of these students have received some financial assistance during the year, although only five were entirely supported through Center funds or projects. For the next year, we expect to have additional students from India, Korea, Thailand, England, and Greece.

Apart from financial support, the most important way in which the Center facilitates the training of students is by involving them in the day-to-day problems of research projects at the Center. The nature of the assignment varies with the level of training and competence of the students. In their final year, students are treated as research associates in the work on their own dissertations. If appropriate, an entering student may be assigned to work with an advanced student, and the advanced students are given small research grants as necessary to support field work, tabulations, etc. A continuing resource for students is the cumulative file of data from the large number of studies in progress at the Center.

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RESEARCH

Another primary purpose of the Center is to facilitate significant research, both to increase the body of reliable knowledge and to provide training opportunities for students. The Center does not have a single centralized program of research. The guiding principle is to bring into the Center first-rate scholars and to facilitate the work they want to do. Assistance is given by provision of: faculty time (particularly in the summer term), space and equipment, and secretarial and other administrative services, research assistants, and modest funds for other research expenditures. Student research is supported by fellowship stipends and by modest sums for field work, clerical costs, etc. The Center does not provide funds for major new field research projects; these are supported by grants from other agencies. During 1964–65, in addition to support from our Ford grant, research was supported by grants from the Population Council, the Department of Health, Education, and Welfare, the National Science Foundation, and the National Institutes of Health. The basic Ford grant is invaluable in providing funds for exploratory studies, for supplementing grants, and for continuing essential personnel between projects supported by other grants.

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TRAINING STUDENTS

Perhaps our most important contribution is training students from abroad in Ann Arbor. During the current academic year, ten foreign graduate students with a major interest in population and human ecology were enrolled for graduate work in sociology. In addition, one student from Public Health and one from Economics took a substantial part of their training in our program. In addition, several foreign students in economics and in the school of Public Health with a major interest in demography and family planning took courses in population studies or participated in seminars conducted by members of the Center staff.

TAIWAN

The Center has been working in Taiwan or with Taiwanese data for the past three years. This is our major commitment abroad at present. In this activity we are collaborating closely with the Population Council. From February 1962 to June 1964 our Center participated directly with the Taiwan Provincial Health Department in creating and developing the Taiwan Population Studies Center. Since June 1964, the Taiwan Population Studies Center has been completely under the direction of Chinese personnel, with Dr. T. C. Hsu serving as Director and Dr. L. P. Chow serving capably as the Associate Director in charge of its operations. Our Center continues to serve as the principal source of consultants to the Taiwan Population Studies Center. During the past year Dr. John Takeshita and Dr. Ronald Freedman have each made two trips to Taiwan for this purpose.

The Taiwan Population Studies Center has as a principal responsibility the evaluation and study of the family planning program now being developed in every part of the island. In connection with this work we have been assisting as requested with problems of regular record keeping, with an annual sample survey for the whole island, and with a systematic study of the tens of thousands of women who have had intrauterine devices inserted as part of the new program. We have been active in assisting the Taiwan Population Studies Center to obtain financial support for its continuing research program.

We have had a continuing consulting relationship in Taiwan also with the Provincial Civil Affairs Department which is in charge of the remarkable population register for Taiwan. With our advice, the Department has begun publishing regularly The Demographic Fact Book of Taiwan, with detailed data for the 362 local areas of Taiwan. More recently, Paul Liu, after a period of training at our Center, has returned to Taiwan where he is serving as half-time consultant to the Civil Affairs Department in addition to teaching courses in demography for students in sociology and economics at National Taiwan University. The Provincial Civil Affairs Department plans now to obtain and tabulate new types of data which will permit scholars at Michigan and elsewhere to analyze the important fertility decline that is now occurring in Taiwan.

As part of our program of work in Taiwan we have currently in training in Ann Arbor two graduate students from Taiwan.

KOREA

We have been assisting several demographic and family planning programs in Korea under grants from the Population Council. In this area our major responsibility has been to provide technical consultation for two studies: (1) the Sun Dong Gu Family Planning Study being conducted in Seoul by a group of workers from Seoul National University under the direction of Dr. E. Hyock Kwon and (2) the Koyang rural study under the direction of Dr. Jae Mo Yang and Dr. Sook Bang. During the past year Dr. John Takeshita was in Korea twice and Dr. R. Freedman once for this work. At the request of the Population Council, we have also consulted in Korea about an Urban Abortion Study and about the Vital Statistics Survey of the Central Bureau of Statistics. In addition, there is a regular exchange of views on technical problems by mail.

THAILAND

Professor Amos Hawley is in Bangkok for a period of 18 months as a representative of the Population Council to serve as special social science advisor in the Office of the Prime Minister. The program of work has included the evaluation of past fertility and the effects of a family planning program in a rural area through two sample surveys. In addition, Professor Hawley has participated in analysis of migration data and in other demographic activities.

TURKEY

Professor David Goldberg will be in Turkey for the year beginning September 1, 1965 under the auspices of the Population Council. He will be teaching at the Middle East Technical University in Ankara and also participating in a fertility research project. We expect this to be the beginning of some continuing interest in Turkish demography and for the training of some Turkish students.

SAMPLING PROGRAM FOR STATISTICIANS FROM UNDERDEVELOPED COUNTRIES

Professor Leslie Kish, our research associate, directs a program for bringing to the University statisticians from underdeveloped countries for theoretical and practical training in survey sampling. Usually these students are also enrolled as students in the department of mathematics or sociology or other relevant departments. Our Center cannot claim credit for this program which was initiated and is carried out at the Survey Research Center. However, we list it for two reasons. First of all, we have co-operated closely with Dr. Kish and have in a number of instances provided travel funds, scholarships or other supplementary aid for students primarily in his program. Secondly, a number of the students brought to Michigan under this program have taken their formal training in population studies. The combination of survey research skill and population studies is especially important for the underdeveloped areas.

OTHER RELEVANT INTERNATIONAL ACTIVITIES

Members of the Center staff frequently participate in conferences on international demographic problems or correspond or confer with research workers, Professor Freedman is now serving as member of a new committee on Comparative Fertility Studies for the International Population Union. He is also serving as moderator for the opening plenary session of the World Population Conference in Belgrade (August, 1965) on fertility trends.

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THE UNIVERSITY PROGRAM IN POPULATION

Two new Centers in the Population field have been created this year at the University: the Center for Population Planning in the School of Public Health, under the direction of Dr. L. Corsa and the Center for the Study of Reproductive Physiology in the Medical School, under the direction of Dr. S. Behrman. These two new Centers together with our own Population Studies Center constitute the core of the new University Program for Population, which has as its objective fostering teaching and research relevant to population in various places in the University. We expect to be collaborating closely in the coming years with one or both Centers on various projects of mutual interest. As a beginning, during the summer of 1965, representatives from each of the three Centers are involved in teaching the new intensive seminar in Population Planning offered through the School of Public Health. The Operating Committee for the Program in Population consists of the Directors of the three Centers and the Chairman of the departments of Sociology, Maternal and Child Health (Public Health), and Obstetrics and Gynecology (Medical School). The Policy Committee for the Program includes Vice President Roger Heyns, Chairman, Dean William Haber of the College of Literature, Science & Arts, Dean William Hubbard of the Medical School and Dean Myron Wegman of the School of Public Health.

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EXHIBIT 10

STUDIES OF FERTILITY AND FAMILY LIMITATION IN TAIWAN*

(By Ronald Freedman and John Y. Takeshita, University of Michigan Population Studies Center, Ann Arbor, Mich.)

[Reprinted from Eugenics Quarterly, vol. 12, No. 4, December 1965]

BACKGROUND

Our population studies in Taiwan are designed to answer in part two sets of questions about that stage of the demographic transition in which mortality has been low for some time and fertility has just begun to decline:

1. Prior to any organized family planning program what changes occur "naturally" in fertility and family planning and what sectors of the population change first and most?

*Except for the postscript, all of the material in this article is taken from a chapter by the authors in Mindel Sheps and Jeanne Clare Ridley (eds.), *"Public Health and Population Change: Current Research Issues."* Schenkman Publishing Co., Inc., Boston (in press).

2. Can the process of fertility decline be accelerated in a short period in a large population by a massive program to help married couples have the number of children they want? If such a program is effective, what sectors of the population and what aspects of the program are responsible for the success?

Taiwan is a particularly appropriate place in which to study these questions. For some time it has had low mortality and significant progress in social development, conditions which are probably facilitating, if not essential for rapid fertility decline.[1] Compared to other developing countries, Taiwan ranks high on such measures as literacy, circulation of mass media, nonagricultural employment, involvement in a market economy, etc. We interpret a high ranking on such measures to indicate increasing involvement of the Taiwanese population in social and economic relations transcending traditional local and familial settings.

Fertility has been falling slowly all over Taiwan since 1958, without benefit of any large-scale organized family planning program. The fertility decline, described in detail elsewhere (Freedman, et al., 1963) for the period 1958–62, continued in 1963 in every one of the 5 large cities and the 17 other administrative units of Taiwan. The pattern of fertility decline by age is especially significant:

Age:	*Percent change in age-specific fertility 1958–62*
15 to 19	+5
20 to 24	+3
25 to 29	+3
30 to 34	−16
35 to 39	−27
40 to 44	−28
45 to 49	−29
Total fertility rate	−11

The declines begin to appear at age 30 to 34 and then increase sharply with age. This is exactly what we would expect if many women want a moderate number of living children, achieve this by age 30, and then begin to try to limit family size in some way. This is the case, indeed, in the city of Taichung in which we have conducted sample surveys, both to study the fertility and family planning patterns and to evaluate the success of a family planning program which might change fertility.

Taichung, a city of more than 300,000 people, is the capital of the Province of Taiwan and its fourth largest city. As in many Asian cities, its administrative boundaries include both a densely settled urban core containing about two-thirds of the population and a large semi-rural area of farms. A large proportion of those living in the urban core are migrants with a farm background. Apart from variation on the rural-urban dimension, the population is sufficiently heterogenous with respect to indicators of modernization to permit analysis of their effects on fertility (for example, education, family type, type of employment).

One of our principal sources of data for Taichung is the intensive interview survey of a probability sample of 2,432 of the 36,000 married women in the childbearing years (defined as 20 to 39 years old for this purpose). This sample was first interviewed in November–December of 1962 and reinterviewed in November–December 1963 after the main part of the family planning action program was completed.[2]

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[1] For a discussion of the theoretical issues involved, see R. Freedman, 1963. For some detail on economic and social development in Taiwan as well as data from the population register on fertility trends, see Freedman, et al., 1963.

[2] The preprogram survey was done in two stages. Interviews were taken in November–December 1962 with a probability sample of 1,367 married women 20 to 39 years old in Taichung City. Then in January 1963 interviews were taken with an additional probability sample of 1,065 married women 20 to 39 years old with at least two living children. The two samples were combined by weighting, by a factor of two, the interviews from the first survey with wives having less than two living children (a rather small minority). The frequencies shown for the total sample are based on this "inflated" sample of 2,713 cases. We actually interviewed only 2,432 women so frequencies in the total sample should be deflated by approximately 10 percent. The second set of interviews were shorter than the first, so some of the data presented are based only on the first sample. The response rate for the two samples combined (and unweighted) is 97 percent. After the action program the same sample was reinterviewed. The response rate for the reinterview was 96 percent of those still remaining in Taichung. Five percent of the original sample moved out of Taichung and was not followed. The refusal rate was only 1 percent. Most of the noninterviews were for couples who moved to unknown destinations.

Some of the important results of the first preprogram survey reported in previous publications (Freedman, et al., 1963, 1964) will be summarized here in outline form as a background for considering new analyses:

1. There is a strong consensus in the population that a moderate number of children and sons is what they want for themselves and consider ideal for others.[3]

2. Under existing mortality conditions most women have the moderate number of children and sons they want early in the child-bearing period—by the time they are 30 to 34 and often earlier.

3. Most people know about the decline of mortality and are aware that this means that most of their children will survive to be adults.

4. Under these conditions it is not unexpected that a large majority of wives and husbands approve the idea of doing something to limit family size and indicate an interest in learning how to do this.

5. A significant minority of couples have begun to practice some form of family limitation, but the practice is often either too ineffective or too late to enable the couples to limit their families to the desired size.

6. The strata of the population which are most modern in other ways also have the most modern fertility behavior and lead the way in adopting family planning methods in the period before the organized action program. In characterizing such groups as having modern fertility behavior, we mean that:

They want the fewest children.

More of the children they have survive.

They are more likely to do something to limit family size and especially to use contraception.

They are less likely to rely exclusively on abortion.

They have the lowest fertility—this is the net result.

Now which groups have the modern fertility characteristics? We have provided detailed evidence elsewhere (Freedman, et al., 1963, 1964) that they are:

The better educated and those who read the mass media.

Those who own the most modern objects of consumption.

Those living in nuclear rather than in stem or joint families.

Those who are least favorable to traditional Chinese family values.

Those with no farm experience, especially migrants from large cities.

Those who work in an impersonal setting as employees of nonrelatives.

Those who have received information about family planning from multiple sources.

To illustrate the kind of data on which these sweeping generalizations are based, we present in Table 1 for the wives 35 to 39 years old the relationships between two of these important criteria of modernization (wife's education and number of modern objects owned) and the fertility and family planning variables.

In general, the use of *some* form of family limitation is more consistently related to the indices of modernization than any single method of limitation considered or the measures of desired or actual fertility. We interpret this to mean that those with more modern characteristics try various methods to limit family size, but their practice of these methods is frequently either so late or so ineffective that it does not limit family size to the desired level, although it does produce a rather consistent fertility differential.

That the practice of family limitation is still ineffective is indicated by the fact that at age 35 to 39 the total number of children born or alive is higher than desired by the wife for every subcategory considered. This is true despite the fact that the use of some method reaches more than 75 percent for the advanced categories and includes sterilization for as many as 25 percent of the wives in some categories.

Data, not previously reported, about the percentage pregnant at the time of the first survey interview (table 2) indicate that it is likely that the more important specific fertility differentials will be even larger than now when the women have completed their childbearing. Those groups with the lowest fertility at ages over 30 also have the lowest current pregnancy rates. For example, current pregnancy rates are negatively correlated with the couple's education or the number of objects owned.

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[3] It is very important in this culture to have at least two children and at least one son, but there is no desire for large families or unlimited numbers of sons. Three or four children with one or two sons is the modal ideal. Those who have large numbers are not reluctant to say that they would prefer fewer or, at least, prefer no more.

The current pregnancy rates in Table 2 also confirm the continuing importance of having sons. Comparing women with similar numbers of children alive, those without a son have higher pregnancy rates than those with at least one son.

NEW MULTIVARIATE ANALYSES OF THE PREPROGRAM SURVEY

Obviously, many of the modernization variables we have considered must be overlapping in their content and in their effect on family planning. Such an important modernization variable as education, for example, is known to be correlated rather strongly with such other variables as number of modern objects owned or attitudes to traditional familial values. It is desirable to know how much of the variance in the behavior is explained by each of these variables and how much additional explanation is achieved by considering them in combinations. We can present here only a preliminary report in which the dependent variable is the proportion who have used any form of family limitation (contraception, abortion, or sterilization).[4]

[4] The method used here is "multiple classification" analysis. (For explanations and examples of use, see D. S. Freedman, 1963; Morgan, et al., 1962.) Essentially, this is a regression procedure in which each category of each independent variable is a predictor (having the value zero or one). It is unnecessary to consider the categories as having any rank order, and there are no assumptions about the scaling of the variables or linearity of the variables. In the particular case in which we have used family limitation practice as the dependent variable, we have assigned a value of 0 to those who have not and of 1 to those who have practiced family limitation.

TABLE 1.—*Measures of actual and desired fertility, survival rates for children, proportions using various types of family limitation, by wife's education and by ownership of modern objects of consumption, for wives 35 to 39 years old*

Characteristics of couple	Number of couples	Mean number of live births	Mean number of living children	Survival rate for children	Mean number of children wife wants	Percent using—				Percent of those with an abortion never using other methods
						Sterilization	Abortion	Contraception	Any of 3	
Wife's education:										
None	238	5.7	4.9	0.86	4.4	10	8	13	26	35
Primary, not graduated	42	5.2	4.7	.90	4.2	26	17	19	48	(1)
Primary, graduated	187	5.3	4.8	.90	4.2	18	18	32	51	9
Junior level or Senior nongraduate	77	4.5	4.1	.91	3.6	22	17	42	66	5
Graduate senior level or more	75	3.6	3.4	.94	3.3	21	28	53	76	5
Number of modern consumption items owned: [2]										
0 or 1	48	6.4	5.2	.82	4.9	0	10	19	25	(1)
2	72	5.6	4.8	.85	4.4	7	10	14	22	(1)
3	87	5.6	4.7	.85	4.2	10	9	18	31	25
4	84	5.3	4.9	.93	4.2	20	14	14	36	8
5	95	4.6	4.1	.89	4.0	17	14	24	43	15
6	140	4.7	4.4	.92	3.9	21	16	39	63	14
7 or more	93	4.7	4.3	.92	3.9	25	29	48	75	7

[1] Base less than 10.

[2] The objects are: bicycle, radio with record player, radio, electric fan, sewing machine, electric iron, clock or watch, electric pan, motorcycle.

TABLE 2.—*Proportions pregnant at the time of the preprogram survey, by wife's education and by number of modern objects owned, and by number of children and sons, for wives 30 to 39 years old*

		Percent currently pregnant	Number of couples in base group
Wife's education:			
None		12	465
Primary, nongraduate		8	96
Primary, graduate		8	472
Junior level school		2	182
Senior level school or more		4	145
Number of modern objects owned:			
0 to 1		18	132
2 to 4		10	502
5 or more		5	728
Number of living children and sons:			
Children	*Sons*		
0	0	21	38
1	0	15	40
1	1	6	34
2	0	6	18
2	1 or more	4	73
3 or 4	0	17	30
3 or 4	1 or more	7	518
5 or more	Any	7	611

Consider first the education and reading variables. Since husband's education added little to the explanatory effect of wife's education (table 3), we used a husband-wife education code for the subsequent analyses. This husband-wife education code, together with measures of the frequency of newspaper reading by husband and wife, accounts for 16.1 percent of the total variance. The education-reading variables probably indicate whether the couple has access to specific information about family planning and the small family pattern. Perhaps more important, they may measure roughly the contact of the couple with ideas and systems of interaction beyond local and familial groups. The measures of association for education and reading are in each case somewhat larger for the wife than for the husband. This may indicate the special importance of drawing the wife into the modern sector at least so far as family planning is concerned.

Another important variable is the number of modern consumer objects owned. This is a useful index of a modern standard of living and one way in which the couple is drawn into a modern economic sector. Adding this variable to the education-reading cluster brings the explained variance to 18.7 percent. It is much more strongly associated with use of family limitation than is husband's income. How income is spent apparently is more important than how much there is. Money can be used to achieve traditional rather than new values. Husband's income adds very little to the explained variance associated with the education variables alone.

Very little is gained in explained variance by adding to education-reading and number of modern objects owned such other variables as husband's work status, wife's attitude to traditional familial values, or farm background.

Almost all of the variables considered individually have a reasonable and statistically significant relationship to the use of family planning. Whatever is involved in the other variables is, however, covered by education-reading and the number of modern objects owned, so far as the effect on family limitation practice is concerned.

TABLE 3.—*Proportion of the total variance in use of family planning associated with various social variables, for wives 30 to 39 years old*

	Percentage of variance in family limitation use explained
Variables considered singly:	
Wife's education	13.1
Husband's education	11.3
Wife's frequency of newspaper reading	12.9
Husband's frequency of newspaper reading	10.7
Number of modern objects owned	14.8
Husband's work classification	4.4
Wife's attitude to traditional family values	6.4
Couple's farm background	3.2
Husband's annual cash income	3.2
Variables considered in clusters:	
Husband and wife's education	13.7
Husband's education and newspaper reading by husband and wife (education-reading variables)	16.1
Education-reading variables and number of modern objects owned	18.7
Education-reading variables, number of modern objects owned, and husband's work status	18.8
Education-reading variables, number of modern objects owned, husband's work status, and wife's attitudes to traditional familial values	19.2
Education-reading variables and couples' farm background	16.2
Wife-husband's education and husband's income	16.5

As a byproduct of the multiple-classification procedure, Table 4 shows in detail how the proportion using family limitation differs from the average for each category of each variable: (1) when considered alone, and then (2) when various other groups of variables are taken into account. A detailed consideration of these data is not possible here, but the utility of this type of analysis can be illustrated with one example, education. Note that before considering other variables, there is a steady increase from 20 percent below the average in the lowest educational category to 32 percent above average in the highest. If we "adjust" these figures to take out the effect of newspaper reading by husband and wife—a functional test of the meaning of education—the relationship with education persists but is much less steep, the variation (column A) being from −6 percent to +18 percent. If we add an adjustment for number of modern objects, the relationship becomes less steep (column B). But adjusting for husband's employment status and wife's traditional attitudes makes little difference (column C)—the effects which these might have presumably are already taken into account. After adjusting for all these variables, the highest two educational groups still stand out as distinctive. The wife's educational level, i.e., junior versus senior level, has a significant residual effect on the use of family limitation after all of the other five variables are taken into account. Adjusting for rural background makes little difference in the effects of education when we allow for the effect of reading (column D). On the other hand, the small effects of farm background are completely removed when that variable is adjusted for education-reading.

TABLE 4.—*Proportions using family limitation expressed as deviations from proportion for whole group (44 percent), by various social variables in original form and adjusted for effect of groups of other variables, for wives 30 to 39 years old*

	Percent ever using family limitation practice				
	Original deviation from overall average	Deviations from overall average adjusted for effects of variables [1]			
		A	B	C	D
Wife-husband education:					
Both none	−20	−6	−3	−2	−6
Wife none, husband more	−21	−13	−10	−9	−13
Both primary nongraduate	−18	−6	−4	−2	−6
Wife primary nongraduate, husband more	−2	−1	+0	+1	−1
Both primary graduates	−2	−1	−2	−1	−1
Wife primary graduate, husband more	+10	+4	+1	+1	+4
Wife junior level, husband any	+23	+12	+10	+9	+12
Wife senior level, husband any	+32	+18	+14	+12	+18
Wife's newspaper reading:					
Cannot read	−18	−5	−3	−3	
Never reads	−8	−5	−3	−3	
Less than once a week	+12	−6	+5	+5	
1 to 4 times a week	+9	−2	−3	−5	
Every day	+27	+10	+6	+6	
Husband's newspaper reading:					
Cannot read	−24	−13	−8	−8	
Never reads	−22	−9	−5	−5	
Less than once a week	−13	−4	−1	+0	
1 to 4 times a week	−4	+2	+2	+2	
Every day	+15	+6	+3	+3	
Husband's work classification:					
Farm occupation	−19			+1	
Other traditional jobs [2]	−4			−2	
Employed by nonrelative	+5			+2	
Professional worker	+21			−4	
Wife's attitude to traditional familial values: [3]					
Most traditional	−9			−2	
Less traditional	+11			+6	
Least traditional	+19			+2	
Number of modern objects owned:					
0 or 1	−23		−13	−12	
2 or 3	−22		−13	−13	
4	−10		−5	−6	
5	+4		+3	+3	
6	+16		+10	+9	
7 or more	+27		+15	+15	
Couple's farm background:					
Farm now	−19				0
Both some farm background	0				0
Husband or wife farm background	+4				−1
No farm background	+10				+1

[1] The variables in group A are: Wife-husband education, newspaper reading of wife and husband; in group B, group A variables plus number of modern objects owned; in group C, group B variables plus husband's work status and wife's attitudes toward traditional values; in group D, group A variables plus couple's farm background.

[2] These include persons employed by relatives or self-employed in nonprofessional business activities (usually small family shops).

[3] This is a classification of wife's attitudes toward living with her children in her old age, being supported by them in her old age, and desirability of sons living together in a large joint family when they marry.

The numbers of living children and sons influence the use of family limitation independently of the social variables just considered. In another multiple classification analysis, the explained variance was raised to 25.2% by adding a combined code on "number of living children and sons" to the education-reading variables, the number of modern objects owned, farm background, and wife's traditional attitudes. Almost none of the influence of the number-of-children-and-sons variable overlaps the influence of the social variables, so adding this demographic variable substantially increases the variance explained. It appears that both the demographic and the social variables have significant and independent influences in the adoption of family limitation prior to a planned program.

THE DESIGN OF THE EXPERIMENTAL ACTION PROGRAM

The preprogram survey, indicating so clearly that a large part of the population wanted help in family limitation, encouraged the Provincial Health Department of Taiwan to provide the help. For this purpose an experimental action program was developed that must be one of the largest social science studies ever conducted under controlled conditions.

In most general terms, the objective of the program was to see how much family planning action could be increased by a massive program of short duration. A corollary major objective was to observe whether the birth rate for the city would fall substantially. As far as we know, no population this large has ever had a significant birth rate decline as a consequence of an organized program for dissemination of family planning ideas.

Another major objective was to test the power of indirect diffusion by word of mouth in a whole population in which were placed systematically spaced, direct-influence foci from which diffusion could take place. This general objective seems especially important in view of considerable, if unsystematic, evidence that word-of-mouth diffusion through informal communication networks was principally responsible for the spread of family limitation ideas in Japan and the West. The research question was whether messages about family planning can be placed in this informal network on a massive basis to speed the process of diffusion in a short period.

Apart from these general objectives the action study was designed to provide partial answers to a number of important basic questions about how best to conduct such a program and what groups would respond most readily. The more specific objectives were to test the success of the program:

When couples get intensive personal visits by a nurse-midwife.

When both husband and wife, rather than wives only, receive such personal visits.

When mailings only are used to provide information and support.

When couples not reached directly in any way are surrounded by neighborhoods in which there are intensive direct influence.

In different strata. Do the modernized strata of society lead in acceptance? Is the number of children and of sons important?

The basic unit in the research action design is the *lin*—a neighborhood unit containing an average of about 20 households, of which, on the average, about 12 have women aged 20 to 39 years. Taichung is divided officially into about 2,400 such neighborhood units. Each lin was assigned to one of 12 cells in an overall experimental design for Taichung involving four treatments and three diffusion-intensity sectors, as shown in Table 5. The four treatments range from much to little effort as follows:

1. Everything—husband and wife: In these lins all of the stimuli of the program are combined; personal visits by trained health workers for information and supporting motivation, mailings of information, and meetings in the neighborhood, mixing entertainment and information about family planning.

2. Everything—wife only: This involves all the major stimuli except the personal visit to the husband.

3. Mailings: No personal visits (unless requested) or meetings in the neighborhood; instead, a series of mailings of letters and pamphlets provide information on methods, rationale, location of clinics, etc., and includes a return-postal device to request more information or a personal visit from a field worker.

4. Nothing: No direct effort is made; there are posters in the area, and meetings are held at the *li* level (a larger neighborhood unit of about 350 households).

Each lin was assigned to one of these four treatments. It was also located in one of three "density" sectors which differed, so far as possible, only in the proportion of lins getting the more intensive treatments. For this purpose the city was divided into three approximately equal pie-shaped sectors, roughly equated initially on fertility, rural-urban distribution, and educational level. Within each of the three sectors all the lins were distributed randomly among the four treatments in the proportions indicated in table 5. In sector I the largest proportion (50 percent) and in sector III the smallest proportion (20 percent) of the lins were assigned to the "everything" treatments. All couples in the lins of a particular treatment type were supposed to get the same direct message regardless of the sector in which they were located. They differed only in the percent-

age of the surrounding lins getting other treatments. For example, those in the "nothing" lins in sector I had an environment in which many of the neighboring lins were getting the intensive treatment: "nothing" lins in sector III had an environment in which relatively few of the surrounding lins were getting intensive treatment.

TABLE 5.—*Distribution of Taichung lins by treatment and by density sectors in family planning program*

Treatment	Density sector			
	I—Heavy	II—Medium	III—Light	Total
Numerical distribution:				
Everything, husband and wife	232	122	73	427
Everything, wife only	232	122	73	427
Mail only	232	244	292	768
Nothing	232	243	292	767
Total	928	731	730	2,389
Percent distribution:				
Everything, husband and wife	25	17	10	18
Everything, wife only	25	17	10	18
Mail only	25	33	40	32
Nothing	25	33	40	32
Total	100	100	100	100

In addition to the specific treatments, there were some citywide mass-media messages, limited to a very small volume by a local policy decision. In view of the literacy of the population and the excellent mass media available, we believe that major supporting use of such media would have increased the success of the program considerably. Several thousand copies of a set of 15 posters also were placed in prominent locations. Some of these carried information about the location of the clinics, but mainly they presented the idea of family planning in simple, attractive form. There were also a considerable number of meetings with community leaders and with functional groups, such as the farmers' association and the pedicab drivers' association.

Family planning services and supplies were offered at ten clinics located throughout the city. Information, services, and supplies were offered with respect to the diaphragm, jelly, foam tablets, condom, withdrawal, rhythm, oral contraceptives, and the new intrauterine devices. No effort was made to set up a design that would rigidly test the attractiveness of different methods, but the interest in the intrauterine device was so great, as we shall see presently, that its attraction for this population can hardly be doubted.

The extensive experimental program ran from February to October 1963. To test the continuing momentum of the program, clinic and informational services continued to be available for those asking for them but without any attempt to find new cases actively. As some indication of the scope of the program, nearly 12,000 first home visits and over 500 lin meetings were held by June 1963. Follow-up visits of various kinds probably ran to more than 20,000.

The action program was intended to help those who wanted to limit family size rather than to persuade people that they should want to do so. The former is by far the easier task and, in our opinion, it may be the efficient way to begin any large program.

Three sources of data will be available to evaluate the results:

1. The official register can be used to determine fertility rates for Taichung as compared with other large cities and other administrative units of Taiwan. Other comparisons will also be made for lins and groups of lins as they are sorted into 12 cells of the experimental design.

2. The before-and-after panel survey of the 2,432 married women that has already been described.

3. Extensive data can be drawn from short questionnaires for about 4,000 women who came to the clinics and from approximately 12,000 home visits. A major part of our report on results to date is based on these records.

RESULTS OF THE ACTION PROGRAM: A PRELIMINARY REPORT

How successful has the program been? Perhaps the most important test will be the course of the birth rate in the next year or two, but a preliminary evaluation of results on other bases is possible.

One criterion is the number of couples who accepted family planning directly from the program clinics or representatives. Acceptance is defined as the actual insertion of an intrauterine contraceptive device (I.U.C.D.) or the receipt of instruction and the purchase of supplies for other methods with expressed intention to use them.

A total of 3,968 couples (including 764 from outside Taichung) were registered as acceptors between early February and November 10, 1963. The 3,204 cases from the City of Taichung represent 9% of the married women aged 20 to 39 years. After the formal program for finding acceptors ended in the fall of 1963, women continued to come to the clinics without any formal program of recruitment. By May 2, 1964, the number of acceptors had reached 6,188, of whom 25% were from outside the city, and 78% were I.U.C.D. cases.

But many of the wives were really not eligible to accept family planning. For example, this is certainly true of the approximately 10 percent who had been surgically sterilized and of an additional number who believed themselves to be sterile. By excluding women ineligible by various criteria of this type, we arrive at a range of estimates of the percentage of eligibles who became acceptors. A number of such preliminary estimates have been prepared based on the data up to October 15 for the approximately 2,400 women in the intensive survey sample. For example, in one estimate, we excluded as ineligible the women who were believed to be sterile and also those who already were using a contraceptive method they found acceptable, unless they became acceptors in the program. On this basis, only 71 percent of the wives were eligible, and the acceptance rate rises from the initial 9 percent to 13 percent.

A next step is to exclude as ineligible, in addition, women who wanted more children at the first interview (unless they became acceptors in the program). This additional exclusion decreases the percentage eligible to 42 percent and increases the acceptance rate to 21 percent.

In earlier calculations, we had excluded as ineligible women who were pregnant at the first interview or at the first home visit. However, we found later in the post program interviews that the percentage of acceptors among these women was greater than in the sample as a whole, presumably because these women were more often in contact with health personnel in prenatal and antenatal services as well as at the time of delivery. The issue of family planning may also have been much more salient for them. A different approach will have to be developed for the pregnant women, providing an adjustment for the number of months of ineligibility by reason of pregnancy.

Not all of the acceptors are new to the practice of family planning. As of October 15, 1963, 37 percent of the acceptors had previously tried some form of contraception and were dissatisfied with it. Indications are that this group is partly balanced by the couples who adopted some form of family limitation outside of the program itself but in many cases as a consequence of the influence of the program.

As our colleague, Bernard Berelson, has pointed out (Berelson and Freedman, 1964), these kinds of calculations simply illustrate that in a population of this type at any one time "somewhere between half and three-fourths of the target population is simply out of bounds for the purpose. If a program can get as many as a half—or even a third or a fourth—of the remaining group to begin the program of contraception within a few years, it has achieved a good deal. In this kind of work, then, having an impact on 10 percent of the target population in a year or so is not a disappointing failure but a substantial success; one should report, 'Fully 10 percent,' not 'Only 10 percent!'"

It is clear that we need research criteria for evaluating the "success" of programs in populations with changing panels of eligibles. A significant number of cases classified as ineligible at one or another time during the program became cases in the program before it was concluded because of follow-up visits when a temporary barrier (e.g., pregnancy) was passed. One solution is to cite the results with a range of defined bases, such as the range of 9 to 21 percent of eligibles already cited. Other criteria and later data raise the percentage to more than 30 percent.[5]

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[5] The higher rates result from adding to the ineligible group some proportion of the pregnant, the lactating, and others in amenhorea as well as from making allowance for the acceptances after October 15, 1963, considerable in number.

Diffusion and informal communication channels proved to be as important here as they have been elsewhere where family planning has reached large populations. Perhaps the most striking evidence is that by October 15, 1963, 20 percent of all the acceptances came from outside the city, although the formal program was limited to the city itself. About 65 percent of these outside cases came from Taichung Hsien, the administrative unit surrounding the city, but another 25 percent came from the next two adjacent hsiens. The remaining 10 percent came from more distant places all over the island.

Approximately 50 percent of all the cases from inside the city came without benefit of a home visit, although the "everything" home-visit lins did have a higher acceptance rate than any others. Even in the "everything" home-visit lins, 17 percent of all acceptors visited the clinics *before* the home visitor could get to them. Word of mouth spread the news faster than the home visitors could make their rounds!

The indirect impact of the program has been mediated first of all by word-of-mouth communication of friends, relatives, and neighbors and second by regular health station personnel and the program's home visitors who apparently talked to people on their rounds in addition to home visits (table 6). It is our impression, so far, that to an appreciable extent the indirect diffusion is attributable to the involvement of a considerable number of people scattered over the whole city and moving about in it. Thus, there are multiple sources of possible influence and communication which are mutually and cumulatively reinforcing.

The indirect diffusion effect can be seen also in the percentage of acceptances in each of the 12 cells of the experimental design, as shown in Table 7. Although, as expected, the proportion of acceptors is largest in the "everything" lins, the response in the "nothing" and "mail" lins without any direct contact is not inconsiderable. The acceptance rate was highest in the heavy-density sector for each of the four treatments. There was no significant difference between the medium and light sectors.[6]

Other preliminary findings shown in Table 7 suggest that mailings were rather ineffective[7] and that including the husband in home visits made little difference. This latter finding needs to be explored more thoroughly both in the Taichung data and elsewhere in view of its theoretical and practical importance.[8]

TABLE 6.—*Sources of information about the program reported by acceptors who did not have a home visit before accepting, by sector*

Source of information	Taichung City				Outside Taichung
	All sectors	I—Heavy	II—Medium	III—Light	
Friends, relatives, or neighbors percent	47	42	51	50	66
Regular health station personnel percent	26	26	23	31	27
Home visitors or MCHI workers percent	24	30	21	19	5
Letters do	12	14	10	12	—
Meetings do	10	16	5	7	2
Newspaper do	3	3	2	3	2
Posters do	1	1	1	2	—
Private midwives or private doctors percent	1	—	1	1	1
Others do	4	4	4	4	2
Total[1] do	128	136	118	129	105
Total number of cases	1,640	631	408	541	765

[1] Total percent exceeds 100 because some cases gave multiple sources.

[6] The density variations were related to whether those indicating an intention to become acceptors in the home visits did so in fact. In the data for the period up to August 10, 1963, the percentage of acceptors among all those indicating a future intention to be acceptors was by sector: I (Heavy)—60%; II (Medium)—48%; III (Light)—40%. Apparently more reinforcement in the environment helps to move people from intentions to action.

[7] The fact that mailings were not more effective may very well be a result of the fact that they contained no information about the I.U.C.D., which turned out to be almost the only attraction for the non-home-visit cases.

[8] It is possible that male workers for the men might have made a difference in the results. However, we have no reason to believe that the female health workers did not have good rapport with the husbands.

TABLE 7.—*Percent of acceptors among married women 20 to 39 years old, by treatment, by sector in Taichung, Oct. 15, 1964*

Treatment	All sectors	Sector		
		I—Heavy	II—Medium	III—Light
Everything, husband and wife	15	18	10	12
Everything, wife only	14	16	13	11
Mail only	6	7	5	6
Nothing	5	7	5	5
Total	9	12	7	7

TABLE 8.—*Type of contraception adopted by acceptors, by treatment, by whether acceptance before or after home visit, and by location in or out of city*

Method	Inside Taichung			Outside Taichung	Total
	Everything lins		Mail and nothing lins		
	After home visit	Before home visit			
Number:					
IUCD	767	280	1,166	744	2,957
Pills	12	7	38	6	63
Traditional	793	30	111	14	948
Total	1,572	317	1,315	764	3,968
Percent distribution:					
IUCD	49	88	89	97	74
Pills	1	2	3	1	2
Traditional	50	10	8	2	24
Total	100	100	100	100	100

The study has clearly demonstrated the overwhelming appeal of the intrauterine devices in this area. Seventy-four per cent of all acceptances up to November 10, 1963, were IUCD cases.[9] It might be argued that the workers put more emphasis on this method and that this accounts for its popularity. This seems very unlikely, since the IUCD was selected by only 49 percent of acceptors who had had a home visit and by 89 percent of those who heard about the program in other ways (table 8). Further, among those who came from outside the city, a very large majority—97 percent—were attracted by the intrauterine devices.[10] There seems to be little doubt that the success of the program as a whole depended considerably on the availability of the IUCD with all its advantages. We do not know what would have happened if it had not been available.

We have just begun to assemble the data on acceptance rates for the various demographic and social strata. Again the question of eligibility becomes a problem. In Table 9, for a few of the major variables, we compare the distribution of the acceptors with the distribution of the total survey sample and also with the distribution of the sample cases "eligible" in the sense that they were not sterilized or using a method of contraception that satisfied them at the beginning of the program.

As compared with the "eligible" couples, disproportionate numbers of acceptances are older wives, have three or more (and especially four or more) living children, and have at least one living son.

[9] Among the cases coming after the close of the formal program the overwhelming majority were IUCD cases, so that by May 2, 1964, 78% of the total number of acceptances were IUCD cases.

[10] As the program progressed, the proportion having an IUCD removed decreased, and the proportion having reinsertion increased. Further, the proportion with complaints steadily decreased.

Contrary to expectation, a larger proportion of acceptors were from rural districts than was the case for the eligible women. Even taking eligibility into account, the demographic characteristics—wife's age and the number of living children and sons—appear to be much more important than the two social characteristics considered so far.

TABLE 9.—*Percent distribution of the acceptors in the program, of all married women 20 to 39 years old and of eligible married women 20 to 39 years old, by selected demographic and social characteristics*

Characteristics	Percent distribution of—		
	Acceptors	Married women 20 to 39 years old [1]	Eligible married women, 20 to 39 years old, not sterilized and not currently using contraception when program began [1]
Wife's age:			
20 to 24	15	19	23
25 to 29	30	31	35
30 to 34	32	27	24
35 to 39	23	23	18
Number of living children:			
0 to 2	16	37	46
3	21	19	18
4 or more	63	44	36
Number of living sons:			
0	6	20	25
1 to 2	58	56	56
3 or more	36	24	19
Wife's education:			
None	30	29	37
Primary school	49	48	46
More than primary school	21	23	17
Residence:			
Rural district	35	71	28
Urban district	65	29	72

[1] Distributions in these 2 columns are based on the sample survey. The distributions are based on the clinic records of acceptances.

We can only speculate now that in this situation where a general interest in family planning exists at all social levels and where desired family size is moderate at all levels, couples at the right demographic stage can be attracted to family limitation by an organized program which moves the undecided and the ill-informed to action. Having the "modern" social characteristics may be more important in the natural, unplanned development of family planning in which initiative and individual seeking for information and supplies are required.

It is important that significant proportions of acceptors are coming from the demographic and social strata generally considered unpromising. Among the wives who are acceptors, 45 percent are under 30 years of age; 16 percent have fewer than three living children; 6 percent have no sons; and 30 percent have no education. In part this is a result of the large numbers of women in these categories and the large proportion of them who are eligible by almost any criterion. But such results would not be possible without a rather high acceptance rate even in these unpromising strata. It is a hopeful sign for the long-run success of such programs in Taiwan that they are reaching these large groups that have a long period of childbearing ahead of them.

We have ranged intentionally in this report over various aspects of the research in Taiwan to illustrate both the richness of the material that is becoming available and the rapidity with which significant results can be reported. It has been necessary to treat very lightly many topics that will require the much more intensive analysis that we plan to do.

POSTSCRIPT: SUMMER 1965

The preceding report was prepared on the basis of the analysis of data available a year ago. In the meantime, additional data have become available, and the analysis has been carried further in some ways. In general, the newer data and the additional analyses do not contradict the major findings reported above, but there are some interesting new results and insights.

First of all, women have continued to come into the clinics for family planning guidance, although the intensive program to recruit new cases ended in October 1963.[11] In the postprogram period, the proportion of cases coming from outside the city has been even higher than before, and the preference for the IUCD has become even greater, especially in the cases coming from outside the city. It is clear that the IUCD has diffused more easily than the traditional methods. Table 10 shows the cumulative distribution of acceptances by method and location to June 1, 1965.

We also note that between 1963 (the year of the intensive program) and 1964 the birth rate fell more in Taichung than in any of the other major cities of Taiwan:

City:	*Percentage decline in total fertility rate, 1963–64*
Taichung	−6.3
Taipei	−2.6
Keelung	−2.2
Tainan	−3.7
Kaohsiung	−3.9

Taichung's advantage, while substantial, is not so large as we had expected. This is probably due in part to the fact that the retention rate of the IUCD after a year is not so high as had been hoped (72 percent of the women in a medical followup of the Taichung cases still had the IUCD in place after a year). Further, as the following data will show, a significant proportion of the acceptors are persons who had previously tried another method; therefore, the effect on the birth rate is not so great as it might be if they were using a method for the first time following the program.

Table 11 shows the acceptance rates to April 1, 1964, by the experimental variables separately for all methods, the IUCD, and for other (mainly traditional) methods. We also show for each of the 12 cells of the experimental design the percentage of all acceptances which were IUCD cases. The total acceptance pattern is similar to that already discussed in the main article above. The significant point, however, is that the major differentials of the treatments and the sectors are for the traditional methods only. The differences for IUCD acceptances are very small. In short, the intensive "everything" treatment "sold" the traditional methods, but the IUCD diffused throughout the city almost independently of the experimental variables.

The program has had a special appeal to couples who already feel they have a problem of family limitation and who have made an unsatisfactory attempt to do something about it. For example, the acceptance rate was highest for those

[11] There is, however, since the beginning of 1964, an island-wide program of family planning involving home visits, group meetings, mailings, etc. These efforts are much more diffuse than those in Taichung during its experimental program; besides, Taichung was "left alone" until April 1, 1964, after which date some home visiting and group meeting activities were resumed to be continued on a routine basis.

couples who had used a contraceptive method in the past but were not using anything when the program started:

Contraceptive experience prior to program:	*Percentage acceptance rate to Apr. 1, 1964*
Currently using when program began	7.3
Had used once but not currently	30.4
Never used	10.5

TABLE 10.—*Number and percent acceptors to June 1, 1965, by method accepted, by location inside or outside city*

Location	Method			Total
	Intrauterine devices	Traditional methods	Pills	
Number:				
Taichung	5,904	1,436	459	7,799
Outside Taichung	2,941	43	43	3,027
Total	8,845	1,479	502	10,826
Percent distribution by location:				
Taichung	66.7	97.1	91.4	72.0
Outside Taichung	33.3	2.9	8.6	28.0
Total	100.0	100.0	100.0	100.0
Percent distribution by method:				
Taichung	75.7	18.4	5.9	100.0
Outside Taichung	97.2	1.4	1.4	100.0
Total	81.7	13.7	4.6	100.0

TABLE 11.—*Percent of acceptors among married women, 20 to 39 years old, by treatment, by sector, Apr. 1, 1964*

Treatment	All sectors	Sector		
		I—Heavy	II—Medium	III—Light
All methods:				
Everything, husband and wife	16.5	19.9	12.0	13.7
Everything, wife only	16.2	17.9	14.4	13.9
Mail only	7.6	8.2	6.6	7.9
Nothing	7.2	8.8	6.3	6.9
Total	10.6	13.7	8.7	8.7
IUCD only:				
Everything, husband and wife	9.8	10.3	8.6	10.2
Everything, wife only	9.7	8.9	10.4	10.8
Mail only	6.7	7.1	5.8	7.1
Nothing	6.6	8.0	5.7	6.2
Total	7.7	8.6	7.0	7.4
Other methods:				
Everything, husband and wife	6.7	9.6	3.4	3.5
Everything, wife only	6.5	9.0	4.0	3.1
Mail only	.9	1.1	.8	.8
Nothing	.7	.8	.6	.7
Total	2.9	5.1	1.7	1.3
Percent of acceptances, IUCD:				
Everything, husband and wife	59.0	52.0	72.0	75.0
Everything, wife only	60.0	50.0	72.0	78.0
Mail only	88.0	87.0	88.0	90.0
Nothing	90.0	91.0	90.0	90.0
Total	73.0	63.0	81.0	85.0

The program was especially appealing also to those who had used induced abortion, a method that the respondents generally regarded as undesirable. This is demonstrated in the following data:

	Percentage acceptance rate to Apr. 1, 1964
Previous experience with family limitation methods:	
Contraception only	12.0
Contraception and abortion	18.1
Abortion only	29.1
Sterilization	0.0
Never used anything	9.1

Clearly the strongest appeal of the program is to those who have previously made some attempt to limit family size and especially to those using unsatisfactory methods.

Another way of putting this is to say that those who feel they have a problem are most interested in accepting. This is indicated further by the fact that acceptance is highest among those who have most recently demonstrated their fecundity. For example, the following data indicate that acceptance rate is higher the shorter the period since the last birth, and this is especially accentuated when the previous use of some family limitation method (other than sterilization) is taken into account. The higher acceptance rates are found among those who have recently had a live birth *and* have tried to limit family size previously:

Months since last birth	Percent acceptance rate to Apr. 1, 1964, among those who—	
	Never previously used any form of family limitation	Used contraception or abortion at some time before program began
Less than 9	14.2	29.0
9 to 11	11.8	20.0
12 to 23	11.8	17.3
24 to 59	7.2	13.7
60 or more	0	8.2

The influence of fecundity on the acceptance pattern is further indicated in the finding that those accepting a method in the program previously had higher fertility than those not accepting. Furthermore, those accepting the IUCD had higher fertility than those accepting other methods:

	Birth rate (per 100 women) in 3 years preceding program for women married at least 5 years
Acceptance status by Apr. 1, 1964:	
Accepted IUCD	403
Accepted other methods	386
Did not accept	317

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EXHIBIT 11

FARM BACKGROUND AND DIFFERENTIAL FERTILITY

(Otis Dudley Duncan,* University of Michigan, Reprinted from Demography, Vol. 2, 1965)

Recent studies have suggested that within the nonfarm population the classic pattern of differential fertility is confined to couples in which one or both spouses grew up on the farm. This discovery in Goldberg's data for couples in Detroit (1952–58) in which the wife was 40 years old or over[1] was followed by Freedman and Slesinger's generally similar findings for U.S. nonfarm white couples (1955) in which the wife was 18–39 years of age.[2] Both studies are based on fairly small samples. This makes replication advisable. Neither study provides national data on couples with completed fertility. The present paper fills these gaps in our stock of demographic information.

The data come from the March 1962 Current Population Survey of the Bureau of the Census, in which standard information on cumulative fertility (children ever born) was collected. On behalf of the present writer and a co-investigator, the Bureau appended to the CPS interview a supplementary self-enumeration questionnaire, "Occupational Changes in a Generation" (OCG), which asked each male respondent 20–64 years old to state the occupation of his father and his father-in-law (if the respondent was married and living with his wife). Questionnaires were completed by five-sixths of the eligible respondents, after a subsample of initial nonrespondents was followed up so that unbiased estimates could be calculated.

The OCG questionnaire asked the respondents to indicate "the kind of work your father (or other person who was the head of your family) did when you were about 16 years old." If the father was a farmer, farm manager, farm laborer, or farm foreman, the respondent is classified as having "farm background." Any other response, including occupation unknown or not reported,

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[1] David Goldberg, "The Fertility of Two-Generation Urbanites," Population Studies, XII (March 1959), 214–222; see also his "Another Look at the Indianapolis Fertility Data," Milbank Memorial Fund Quarterly, XXXVIII (January 1960), 23–36.

[2] Ronald Freedman and Doris P. Slesinger, "Fertility Differentials in the Indigenous Non-Farm Population of the United States," Population Studies, XV (November 1961), 161–173.

falls into the category of "nonfarm background." In the analysis, this classification is made only for couples currently not residing on farms. Although background is ignored for farm residents, it can be shown that in about 85–90 percent of the couples currently residing on farms at least one spouse has farm background.

Table 1 indicates the relative frequency of couples by current residence and combinations of the spouses' backgrounds. The gradient by age of wife faithfully reflects the historical trend of urbanization: 51 percent of the oldest white couples (wife 57–61) are nonfarm residents, both spouses with nonfarm background, while 72 percent of youngest couples (wife 22–26) are in this category, which ultimately will claim all but a tiny minority of our population. There is, as one might expect, some assortative mating by farm background, in that nonfarm couples in which both spouses have farm background are rather more numerous than would be the case with random pairing.

The present analysis is confined to couples in which the wife was 42–61 years old in March of 1962, that is, couples with essentially completed fertility. (The sample of approximately 6,000 couples represents an estimated population of 13,736,000 couples.) It may be noted that this group of women, born in 1900–1919, ended their childbearing period with smaller completed family size than any precedent cohort. Moreover, much of their childbearing was completed before the "baby boom" was in full swing. Hence subsequent cohorts will likewise exceed the fertility performance of the 1900–1919 cohorts. We are, therefore, looking at differential fertility in the cohorts of women who went the farthest in limiting their family size among all cohorts on record. Their experience is critical in any interpretation of the long-term uninterrupted decline of fertility during the period before World War II.

TABLE 1.—*Percent distribution of married couples, spouse present, by residence and farm background, by age of wife and color—Civilian noninstitutional population of the United States (March 1962)*

Age of wife and color	All groups		Nonfarm residence, by background				Farm residence
	Number (thousand)	Percent	Husband, nonfarm		Husband, farm		
			Wife, nonfarm	Wife, farm	Wife, nonfarm	Wife, farm	
White:							
22 to 26	3,726	100	71.9	8.0	9.9	5.1	5.1
27 to 31	4,007	100	66.9	9.3	10.7	7.3	5.8
32 to 36	4,685	100	66.1	9.0	10.6	8.3	6.0
37 to 41	4,907	100	61.5	10.3	11.3	9.3	7.6
42 to 46	4,311	100	59.0	9.9	12.5	10.3	8.3
47 to 51	3,785	100	55.4	10.6	13.1	11.8	9.1
52 to 56	2,810	100	53.1	10.4	13.1	12.8	10.6
57 to 61	1,846	100	51.1	13.7	11.8	13.4	10.0
Nonwhite:							
22 to 26	393	100	59.3	11.4	12.5	9.9	6.9
27 to 31	417	100	58.3	7.4	12.7	16.1	5.5
32 to 36	473	100	47.4	8.9	17.1	16.9	9.7
37 to 41	458	100	56.1	9.2	14.2	15.7	4.8
42 to 61	984	100	36.5	12.7	16.8	23.5	10.6
Total:							
22 to 26	4,119	100	70.8	8.3	10.1	5.5	5.3
27 to 31	4,494	100	66.1	9.1	10.9	8.1	5.8
32 to 36	5,158	100	64.4	9.0	11.2	9.1	6.3
37 to 41	5,365	100	61.1	10.2	11.6	9.8	7.3
42 to 61	13,736	100	54.1	10.9	13.0	12.6	9.4

Source: March 1962, current population survey and supplementary questionnaire, "Occupational Changes in a Generation."

Differentials are studied in terms of a single indicator—educational attainment. This is a particularly useful variable in the analysis of completed fertility because it is determinate as of an early date in the childbearing cycle, if not before. Variables like current income or husband's occupation, ascertained as of the survey date, may not represent the couple's socio-economic situation at the time their family growth was in process. Educational attainment is known for both spouses. Hence parallel analyses are made of fertility by wife's education and by husband's education.

Let us consider first the variation of fertility by farm background alone. The farm background classification actually is a compound one, present residence by husband's background by wife's background. With each factor dichotomized, there are eight subcategories in the logical product. However, background was ignored in the case of couples presently residing on farms, since the vast majority of them have farm backgrounds. In the present data, therefore, the background-residence classification appears with only five categories. In effect, background is supposed to make a difference in fertility only for those couples not residing on farms. Now let us assume for this group of couples that there is an effect for husband's background and possibly a different effect for wife's background and that the wife's fertility is determined by the sum of the two. In other words, we assume no interaction effect for the background classification. Here is a model that conveniently represents these assumptions:

$$Y_a = a + bR + cHR + dWR + U_a. \qquad (0)$$

In Model (0), Y_a is the number of children ever born to the a*th* wife. R, H, and W are binomial ("dummy") variables. $R=1$, if the couple has a nonfarm residence; $R=0$, if a farm residence. $H=1$, if the husband's background is nonfarm; $H=0$, if it is farm. $W=1$, if the wife's background is nonfarm; $W=0$, if it is farm. HR and WR are the respective products of the two variables. Writing the model with these product terms is merely an artifice for confining the background classification to couples with nonfarm residence. In working with Model (0), the parameters are estimated by least squares, making use of the conventional normal equations for multiple regression; that is a, b, c, and d are so computed that $\sum_a U_a^2$ is a minimum. The least-squares solution yields the following values: $a=3.34$, $b=-.56$, $c=-.33$, and $d=-.25$.

TABLE 2.—*Pattern and results of Model (0)*

Item	Nonfarm residence, by background				Farm residence
	Husband, nonfarm		Husband, farm		
	Wife, nonfarm	Wife, farm	Wife, nonfarm	Wife, farm	
Variables:					
R equals	1	1	1	1	0
HR equals	1	1	0	0	0
WR equals	1	0	1	0	0
Computed value:					
Y' equals	$a+b+c+d$	$a+b+c$	$a+b+d$	$a+b$	a
Y'' equals	2.20	2.45	2.53	2.79	3.34 } [1]
Observed mean	2.21	2.40	2.49	2.83	3.34 } [1]

[1] Exact agreement required by model.

To clarify the reasoning behind this model and to summarize numerical results, Table 2 shows the pattern of scoring of the binomial variables representing background and residence, the values computed from the regression equation, and the observed mean fertility in each background-residence category. Without bothering with a test of significance, the assumption of additivity of background effects seems adequately justified by the numerical results. Model (0), of course, tells us little that is not already evident upon inspection of the observed means; but it does serve to represent an assumption to be used in subsequent work, and it does compactly summarize the observed variation in fertility by farm background and residence.

Introduction of wife's educational attainment as a classification along with farm background yields the observations recorded in Table 3. Inspection of this table, aided by the graphic representation in Figure 1*A*, suggests the following summary. Fertility is inversely related to education in the population as a whole. This pattern, however, is greatly attenuated among nonfarm couples, both spouses having nonfarm background. If either spouse has farm background or if the couple resides on a farm, the inverse relationship is pro-

nounced. Moreover its pattern is much the same for nonfarm couples with farm background as for farm residents, although the overall level of fertility is higher for the latter group.

TABLE 3.—*Estimated number of couples and mean number of children ever born per wife, for married couples, spouse present, wife 42 to 61 years of age, in the civilian noninstitutional population of the United States, by educational attainment of wife and residence and farm background of couple (March 1962)*

Years of school completed by wife	All couples	Nonfarm residence, by background					Farm residence
		Husband, nonfarm		Husband, farm		Husband and/or wife farm background	
		Wife, nonfarm	Wife, farm	Wife, nonfarm	Wife, farm		
	Number of couples (thousands)						
All couples	13,736	7,436	1,498	1,783	1,726	(5,007)	1,293
Elementary:							
0 to 4	526	126	77	79	135	(291)	108
5 to 7	1,465	563	187	186	314	(687)	216
8	2,431	1,154	246	302	422	(970)	307
High school:							
1 to 3	2,662	1,523	236	384	325	(945)	194
4	4,328	2,688	463	552	349	(1,364)	274
College:							
1 to 3	1,367	752	192	188	107	(487)	127
4 or more	956	629	96	93	72	(261)	67
	Children ever born per wife						
All couples	2.45	2.21	2.40	2.49	2.83	(2.58)	3.34
Elementary:							
0 to 4	3.96	2.30	3.84	4.28	4.44	(4.24)	5.15
5 to 7	3.07	2.39	3.12	3.63	3.40	(3.39)	3.85
8	2.71	2.43	2.91	2.52	2.87	(2.77)	3.53
High school:							
1 to 3	2.47	2.38	2.22	2.51	2.58	(2.46)	3.26
4	2.11	2.09	1.99	1.99	2.10	(2.02)	2.70
College:							
1 to 3	2.14	1.99	2.06	2.32	2.42	(2.24)	2.62
4 or more	1.98	1.98	1.66	1.83	2.35	(1.91)	2.18

Source: See table 1, p. 52.

The findings, therefore, confirm the Goldberg-Freedman hypothesis that differential fertility within the nonfarm sector is due primarily to the pattern for couples with farm background. The observation that this pattern of differentials by education resembles the one found in the resident fram population yields an extension of their hypothesis.

It seems worthwhile, for analytical purposes, to venture a formal restatement of the hypothesis. It will be noted that the hypothesis concerns an interaction effect; that is, it declares that the "effect" of one variable (education) is not the same in all subgroups of another factor (farm background) but rather depends on which subgroup of the second factor is under examination.

Consider the following two models:[3]

$$Y_{ia}=a+bR+cHR+dWR+e_i+U_a(i=1, \ldots, 7) \quad (1)$$

$$Y_{ja}=a+bR+cHR+dWR+g_j+U_a(j=1, \ldots, 14) \quad (2)$$

[3] Methods used in this analysis are discussed in T. P. Hill, "An Analysis of the Distribution of Wages and Salaries in Great Britain," *Econometrica*, XXVII (July, 1959), 355–81; D. B. Suits, "Use of Dummy Variables in Regression Equations," *Journal of the American Statistical Association*, LII (December, 1957), 548–51. For an earlier application in fertility research, see Deborah S. Freedman, "The Relation of Economic Status to Fertility," *American Economic Review*, LIII (June, 1963), 414–26.

In both models the coefficients of R, HR, and WR represent the (net) effects of the background-residence classification. In Model (1), there is a set of (net) effects, c_i, for education, and it is assumed that these effects are the same for all background-residence groups. Model (1), therefore, allows for no interaction of education with farm background. In Model (2), there is a set of (net) effects, g_j, for education, which allows for such an interaction. For $j=1, \ldots, 7$, effects of education are specified for couples in which both spouses have nonfarm background; for $j=8, \ldots, 14$, education effects are specified for couples in any of the remaining categories of background-residence. If the Goldberg-Freedman hypothesis is correct, that is, if interaction is present, the two sets of education effects will differ. Model (1), therefore, states the null hypothesis; Model (2) represents a particular alternative hypothesis suggested by previous research and by study of the data at hand.

As before, the parameters of the models are estimated by least squares, imposing the restrictions,

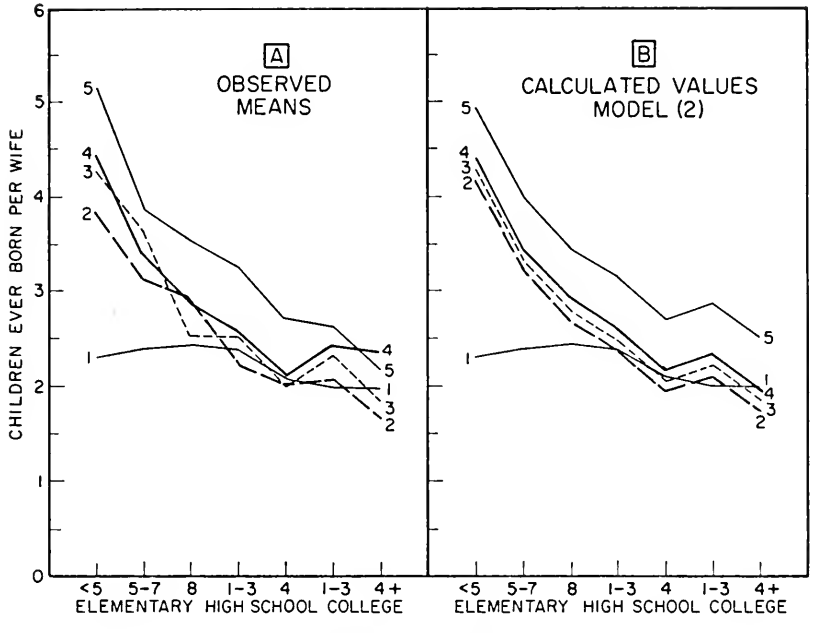

FIGURE 1.—Fertility by wife's education, by residence and farm background of couple: (1) nonfarm residence, both spouses nonfarm background; (2) nonfarm residence, husband nonfarm background, wife farm background.

$$\sum_{i=1}^{7} n_i c_i = 0$$

and

$$\sum_{j=1}^{14} n_j g_j = 0;$$

where n_i and n_j are the respective marginal frequencies. Table 4 shows the estimates derived from the two models. It can be seen that Model (1) results in an averaging of the two quite different sets of education effects which are allowed to appear in Model (2). There is no question that Model (2), with 14 education parameters (13 of them being independent), better fits the data than Model (1), with its 7 education parameters (6 of them being independent).

The "explained sum of squares" for Model (2) amounts to 7.2 percent of the total sum of squares, as compared with 6.2 percent for Model (1). Is Model (2), however, a sufficiently precise summary of the data? An affirmative answer is suggested by the fact that the between-class sum of squares computed from the 35 means in Table 3 amounts to 7.4 percent of the total sum of squares, an increase of only 0.2 over Model (2). The goodness of fit of Model (2) is likewise suggested by a comparison of Figures 1*A* and 1*B*. In Figure 1*B* are shown the computed values,

$$Y_j' = a + bR + cHR + dWR + g_j, j = 1, \ldots, 14,$$

while Figure 1*A* is a plot of the observed means. Although Model (2) is no doubt an idealization, the data at hand hardly suffice to identify any specific ways in which it may distort relationships in the population from which the sample was drawn. The model, in any event, summarizes or reduces the data in much the same sense that a standardized rate summarizes a set of specific rates.

In the analysis to this point, the entire sample of couples, wife 42–61 years old, has been treated as an aggregate, without subdivision by color or age of wife. The first panel of Table 5 suggests that there are some differences by these classifications. In each of the five color-age categories, however, one sees that fertility generally is lowest for nonfarm couples with wholly nonfarm background and highest for farm residents, while nonfarm couples with farm background are intermediate. Introduction of an age-color control into the analysis seemingly would have little effect on the pattern already described. The sample is to small, however, to impose this control by direct cross-tabulation.

TABLE 4.—*Estimates of the effect of wife's education and of residence and farm background of the couple upon fertility (derived from models 1, 2, and 3)*

Variable	Model (1)		Model (2)				Model (3) [1]			
Residence and background: [2]										
a	3.20		3.17				2.97			
b	−.56		−.54				−.45			
c	−.23		−.23				−.09			
d	−.14		−.12				−.08			
			Nonfarm [3]		Farm [4]		Nonfarm [3]		Farm [4]	
Wife's education	$i=$	$e_i=$	$j=$	$g_j=$	$j=$	$g_j=$	$j=$	$g_j=$	$j=$	$g_j=$
Elementary:										
0 to 4	(1)	1.35	(1)	0.02	(8)	1.78	(1)	−0.01	(8)	1.60
5 to 7	(2)	.54	(2)	.10	(9)	.81	(2)	−.05	(9)	.69
8	(3)	.21	(3)	.15	(10)	.27	(3)	.06	(10)	.21
High school:										
1 to 3	(4)	.04	(4)	.09	(11)	−.04	(4)	−.02	(11)	−.07
4	(5)	−.30	(5)	−.19	(12)	−.48	(5)	−.20	(12)	−.42
College:										
1 to 3	(6)	−.30	(6)	−.29	(13)	−.31	(6)	−.19	(13)	−.02
4 or more	(7)	−.43	(7)	−.30	(14)	−.68	(7)	−.03	(14)	−.19

[1] Net of age-color, marital history, and labor force effects; estimates of these effects are not shown.
[2] See table 2 for interpretation of symbols.
[3] Nonfarm residence, both spouses nonfarm background.
[4] Farm residence, either or both spouses farm background.

Table 5 also calls attention to two other well-known correlates of fertility—wife's age at marriage and her labor force status. These might perhaps be thought of as "intervening" variables in a simplified causal model, wherein fertility is the dependent variable, education and farm background the independent variables. Unfortunately, labor force status is ascertained as of the survey date, and is, therefore, an imperfect surrogate for information on long-term work experience, which is not available.

TABLE 5.—*Mean number of children ever born per wife, for married couples, spouse present, wife 42–61 years of age, in the civilian noninstitutional population of the United States, by color and age, marital history, labor force status of wife, and residence and farm background of couple (March 1962)*

Characteristic of wife	All couples	Nonfarm residence, by background				Farm residence
		Husband, nonfarm		Husband, farm		
		Wife, nonfarm	Wife, farm	Wife, nonfarm	Wife, farm	
All couples	2.45	2.21	2.40	2.49	2.83	3.34
Color and age:						
White:						
42 to 46	2.67	2.50	2.51	2.91	3.03	3.21
47 to 51	2.32	2.21	2.26	2.28	2.41	3.05
52 to 56	2.28	1.94	2.30	2.32	2.80	3.30
57 to 61	2.29	1.86	2.63	2.15	3.12	3.12
Nonwhite:						
42 to 61	2.78	2.18	2.24	2.61	2.96	5.27
Marital history:						
Married once at age—						
Under 18	3.64	3.47	3.36	3.25	3.83	4.54
18 or 19	2.99	2.67	3.08	2.99	3.31	3.63
20 or 21	2.77	2.39	2.90	3.07	3.00	3.74
22 or 24	2.38	2.22	2.52	2.36	2.75	2.93
25 or older	1.66	1.61	1.71	1.63	1.52	2.37
Married more than once	2.25	2.16	2.07	2.20	2.70	2.68
Labor force status:						
In labor force	2.16	2.01	2.10	2.22	2.47	2.65
Not in labor force	2.65	2.35	2.62	2.70	3.10	3.65

Source: See table 1, p. 52.

The next step in the analysis, therefore, is to inquire whether the pattern of differentials by education and farm background is modified when marital history, labor force status, and age-color are taken into account. We might first note that in all background-residence groups fertility is inversely related to age at marriage, and the strength of this relationship is much the same in all five groups. Labor force participation, on the other hand, while associated with lower fertility in all background groups, makes rather less difference for nonfarm couples with nonfarm background than for those with farm background and less difference for the latter than for farm residents.

The procedure is to consider a third model:

$$Y_{jsta}=a+bR+cHR+dWR+g_j+w_s+z_t+U_a(j=1,\ \ldots,\ 14;\ s=1,\ \ldots,\ 30;\ t=1,\ 2). \qquad (3)$$

Here w_s is the set of 30 net effects of the categories in the cross-classification of age-color (5 categories) by marital history (6 categories), and z_t represents the net effects for the two categories of labor force status. We are not primarily interested in the estimation of these effects as such or in their contribution to the explanation of variation in fertility. (Data on these variables are, of course, available from other sources.) Instead, attention is focused on the question whether the estimates for g_j, the education-background effects, are much different in the context of Model (3) from the results obtained with Model (2). That is, does the imposition of controls for age-color, marital history, and labor force status produce results which require a reinterpretation of differential fertility by education and farm background? As before, estimates are derived from the normal equations for a least-squares solution, with the additional constraints that the weighted sum of each set of net effects, g_j, w_s, and z_t, is zero.

In Table 4, results for Model (3) are shown alongside those for Model (2). It is apparent at once that controlling for age-color, marital history, and wife's labor force status produces little change in the estimates of net effects of educa-

tion by farm background. That is, estimates of the values of g_j derived from the two models are closely similar. The addition of the control variables does, of course, improve the prediction of fertility and does attenuate slightly the education differentials. It does not substantially qualify the observation that these differentials are primarily observed in couples either residing on farms or with farm background.

The parallel analysis of differentials by husband's education is summarized in Tables 6 and 7. On the whole, the results fall into much the same pattern as those for wife's education, as the reader may verify. Comments will be confined to the minor differences between the two sets of findings.

TABLE 6.—*Estimated number of couples and mean number to children ever born per wife, for married couples, spouse present, wife 42 to 61 years of age, in the civilian noninstitutional population of the United States, by educational attainment of husband and residence and farm background of couple (March 1962)*

[Totals rounded independently of detail]

Years of school completed by husband	All couples	Nonfarm residence, by background					Farm residence
		Husband, nonfarm		Husband, farm		Husband and/or wife farm background	
		Wife, nonfarm	Wife, farm	Wife, nonfarm	Wife, farm		
		Number of couples (thousands)					
All couples	13,736	7,436	1,498	1,783	1,726	(5,007)	1,293
Elementary:							
0 to 4	940	253	109	135	245	(489)	198
5 to 7	1,786	731	168	288	339	(795)	260
8	2,740	1,170	284	439	479	(1,202)	367
High school:							
1 to 3	2,606	1,449	314	315	310	(939)	218
4	3,104	2,003	346	344	247	(937)	163
College:							
1 to 3	1,216	845	137	134	43	(314)	55
4 or more	1,346	987	139	128	59	(326)	32
		Children ever born per wife					
All couples	2.45	2.21	2.40	2.49	2.83	(2.58)	3.34
Elementary:							
0 to 4	3.31	2.48	2.39	3.41	3.56	(3.25)	4.51
5 to 7	3.02	2.44	3.85	3.44	2.98	(3.33)	3.72
8	2.65	2.44	2.49	2.30	3.08	(2.66)	3.30
High school:							
1 to 3	2.39	2.31	2.20	2.38	2.56	(2.38)	2.91
4	2.10	2.11	2.02	1.98	2.15	(2.04)	2.45
College:							
1 to 3	1.89	1.85	1.85	2.01	1.70	(1.90)	2.35
4 or more	2.13	2.06	2.42	2.20	2.19	(2.29)	2.72

Source: See table 1, p. 52.

TABLE 7.—*Estimates of the effects of husband's education and residence and farm background of the couple on fertility (derived from models 1, 2, and 3)*

Variable	Model (1)		Model (2)				Model (3)[1]			
Residence and background:[2]										
a	3.17		3.15				2.97			
b	−.53		−.50				−.44			
c	−.19		−.18				−.05			
d	−.16		−.18				−.12			
			Nonfarm[3]		Farm[4]		Nonfarm[3]		Farm[4]	
Husband's education	$i=$	$e_i=$	$j=$	$g_i=$	$j=$	$g_i=$	$j=$	$g_i=$	$j=$	$g_i=$
Elementary:										
0 to 4	(1)	0.70	(1)	0.20	(8)	0.89	(1)	0.05	(8)	0.71
5 to 7	(2)	.50	(2)	.15	(9)	.74	(2)	.01	(9)	.65
8	(3)	.14	(3)	.16	(10)	.13	(3)	.08	(10)	.14
High school:										
1 to 3	(4)	−.05	(4)	.03	(11)	−.16	(4)	−.03	(11)	−.15
4	(5)	−.29	(5)	−.18	(12)	−.51	(5)	−.20	(12)	−.38
College:										
1 to 3	(6)	−.49	(6)	−.43	(13)	−.63	(6)	−.32	(13)	−.42
4 or more	(7)	−.21	(7)	−.22	(14)	−.19	(7)	−.09	(14)	.13

[1] Net of age-color, marital history, and labor force; estimates of these effects are not shown.
[2] See table 2 for interpretation of symbols.
[3] Nonfarm residence, both spouses nonfarm background.
[4] Farm residence, either or both spouses farm background.

In the first place, differentials by husband's education are not quite so pronounced as those by wife's education. The education of the wife makes more difference than that of the husband, and the former variable, where it does produce differentials, exhibits rather more clearly a simple monotonic decline of fertility with advancing education. Among nonfarm couples with farm background, the three background combinations do not show a consistent contrast between elementary 0–4 and elementary 5–7 on husband's education, though they do on wife's. (Sample frequencies are, of course, rather small here.) At the other end of the education scale, there is a noticeable reversal of the inverse relationship, comparing husband's education college 1–3 with college 4+. This reversal appears in all five residence-background groups when the classification is by husband's education but in none of them when it is by wife's education.

Because of the inconsistencies at the lower end of the education scale—whether real or merely artifacts of sampling fluctuations—Model (2) is not quite so attractive as a reduction of the data as it was for wife's education. It does, nevertheless, accurately reflect the fact that education differentials are quite minor for nonfarm couples with wholly nonfarm background but appreciable for all other groups of couples. As the results for Model (3) indicate, this conclusion is not seriously qualified by the introduction of control variables. In other words, neither the educational differential nor the variation in its pattern by farm background is readily explained by the age-color composition of the background groups or by differences among them in patterns of age at marriage and wife's labor force participation.

DISCUSSION

This analysis was focused on the marital fertility of an especially interesting group of female cohorts, those representing a very late stage in the transition to controlled fertility in the United States. The mean completed fertility of these cohorts was 2.45 births per married couple still intact in 1962. Some 54 percent of the women were in marriages both parties to which were persons of nonfarm background. Mean fertility in this segment was 2.2 with only slight variation around this mean by education, either that of the woman herself or that of her husband. Equally low fertility was characteristic of the couples who, though originating on farms, had attained greater than average amounts of education. To observe substantially higher values of mean fertility, one had to study the minority of couples characterized by *both* farm origin and low levels of educational attainment.

To express the conclusion in another way: In these cohorts, a sufficient condition for controlled fertility was indicated by *either* of two characteristics—two generations of nonfarm residence in the history of both spouses or attainment of high levels of schooling. It is as though a commitment to the "modern" fertility pattern could be made either by nonfarm rearing or by prolonged contact with the educational system. In either event, the relevant experience is one that occurred early in the life cycle, before the period of family growth was well under way.

We may forecast with some confidence—indeed, a part of the experience of subsequent cohorts is already a matter of record—that the combination of factors apparently necessary to produce high fertility, low educational attainment and farm background, will characterize an ever smaller fraction of women. This does not preclude future changes in overall fertility levels, for the hypothesis does not take into account temporal variation in more or less independent determinants of family size. We can only anticipate that the sector to which the classic pattern of differential fertility applies will become progressively smaller and hence its influence on differentials in the aggregate progressively less.

Exhibit 12

Socioeconomic Factors in Religious Differentials in Fertility*

(By Ronald Freedman, Pascal K. Whelpton, and John W. Smit, American Sociological Review, Vol. 26, No. 4, August 1961)

Precision matching is used to test whether religious differences in fertility behavior result from socio-economic differences between the major religious groups. The 66 Jewish couples from a national sample survey of fertility are matched with Catholic and Protestant couples on duration of marriage and five socio-economic characteristics. These socio-economic controls eliminate most of the Protestant-Jewish differences for the fertility variables. However, the Catholic-Jewish differentials are not reduced. Apparently the distinctive Catholic fertility pattern cannot be explained by the combination of socio-economic characteristics considered. The significance of these results is discussed.

Jews, Protestants, and Catholics in the United States are known to differ in their behavior and values in the area of fertility and fertility planning. Several recent studies[1] have provided systematic descriptions of the nature of these differences. The recent data show that Jews: (1) have the lowest current fertility, (2) expect to have the fewest children, (3) want the smallest families, (4) approve the use of contraception most strongly, (5) are most likely to have used contraception, (6) are most likely to plan the number and spacing of all their children, and (7) are most likely to use the effective appliance methods of contraception. On all of these aspects of the fertility complex, Catholics differ most from the Jews, and Protestants have an intermediate position.

The fertility norms and behavior of the Jews appear to be consistent with their distinctive social and economic characteristics. They have the fertility characteristics we would expect to be associated with their high educational, occupational, and income status, their high concentration in white-collar occupations, their high concentration in metropolitan areas, and the small amount of farm background in their recent history. These social and economic character-

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*A revised version of a paper presented at the annual meeting of the Population Association of America, May 1960, Washington, D.C. The analysis was supported by the Program for Research in Population and Human Ecology of the University of Michigan.

[1] The general characterization of religious differentials and the data used in this paper are taken from the Growth of American Families study. The design and major findings from this study are reported in Ronald Freedman, Pascal K. Whelpton, and Arthur A. Campbell, "Family Planning, Sterility, and Population Growth," New York: McGraw-Hill, 1959. The United States Census Bureau report on actual fertility differences between religious groups is consistent with the results of the Growth of American Families study. (See U.S. Bureau of the Census, "Statistical Abstract of the United States, 1958," p. 41.) The original differences between religious groups reported here are consistent with those found in the Princeton Fertility study, although the measures used are not always the same. The Princeton study is limited to residents of the ten largest metropolitan areas who had a recent second birth. See Charles F. Westoff, "Religion and Fertility in Metropolitan America," in Thirty Years of Research in Human Fertility, New York: Milbank Memorial Fund, 1959, pp. 117–134. A major book-length report on the Princeton study will be published soon by Chales Westoff, Robert Potter, Philip Sagi, and Elliot Mishler.

istics have been associated generally in both theoretical discussions and in empirical work with low fertility, low fertility values, and high rationality in family planning. These social and economic characteristics of the Jews are those toward which the whole American population is moving as it becomes more completely urbanized, although we cannot expect such a concentration in the higher occupational and income positions to become typical of the whole population. But it has seemed reasonable in the past to speculate that the fertility behavior of the total population might develop in the future toward the present Jewish model, if the decisive factors in the present religious differences are related to differences in social and economic characteristics which will diminish. In earlier writing about higher Catholic fertility and associated behavior, the assumption has frequently been made that these differences would vanish as Catholics became similar to the general population in social and economic status.

Is it true that the fertility complex for Protestants and Catholics is different from that of Jews when they have similar social and economic characteristics or is there a residual difference associated with religion even when these social and economic characteristics are taken into account? To provide some basis for answering this question a comparison is made below between the Jewish couples in a national sample and groups of Protestant and Catholic couples from the same sample who match the Jews on a set of relevant social and economic characteristics.

The 66 Jewish couples in the comparison include all the couples with both husband and wife Jewish in a national probability sample of white American couples with the wife 18 to 39 years old.[2] From the same national sample, 66 Protestant and 66 Catholic couples were selected to match the Jewish couples as closely as possible on six characteristics: occupation of husband, education of wife, income of husband, duration of marriage, metropolitan character of present residence, and farm background.[3] Cases where husband and wife did not have the same religious affiliation were excluded. The procedure was to find all the Protestant couples in the sample who had the same combination of characteristics as a particular Jewish couple and then to select randomly one of the Protestant couples as a match. The same procedure was followed in matching 66 Catholic couples with the Jewish sample. The cluster of characteristics of the Jews was sufficiently distinctive so that the number of cases of multiple possibilities for matching was not great, despite the relatively large size of the Protestant and Catholic panels. In fact, in many cases it was not possible to match exactly in terms of the combined categories for all characteristics, and it was sometimes necessary to allow one and in a few cases two of the characteristics to be matched from the closest available category. When this was necessary the closest possible match was made. In some cases the match in an adjacent category was actually closer than possible within the category. Each of the Protestant and Catholic couples match the appropriate Jewish couple on occupation of husband, duration of marriage, and farm background. For Protestants, 45 of the 66 cases match exactly on all of the characteristics, 65 on at least five of the six characteristics, and all on at least four of the six. For Catholics, 35 of the 66 cases match exactly on all characteristics, 61 on at least five of the six, and all on at least four of the six. In carrying through the matching, income was the last criterion used and therefore most of the matching failures are with reference to income.

Since Catholics and Jews marry later than Protestants,[4] and since duration of marriage is significantly related to all of the variables of the fertility complex, it was considered important to match all the cases on number of years married. It was not possible with the number of cases available to match also on the wife's age. However, it seems quite unlikely that the fact that the matched Catholics are one year older than the Protestants and Jews could significantly affect the general results obtained. Leaving age uncontrolled

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[2] The sample for the larger study consisted of 2,713 white, married women 18 to 39 years old, living with their husbands or temporarily separated because of his military service.

[3] The categories used for matching were as follows: occupation—upper white collar, lower white collar, upper manual, lower manual, farm owner or worker; education—grade school only, one to three years of high school, four years of high school, college; income of husband—over $6,000, $4,000 to $6,000, under $4,000; duration of marriage—under five years, five to nine years; ten years or more; present residence—inside or outside of metropolitan area; farm background—either husband or wife has ever lived on a farm, neither has.

[4] There is direct evidence on this point from the national sample under study.

while controlling on duration of marriage means that age at marriage has been permitted to vary. Within the controls imposed, there is some justification for permitting age at marriage to vary, since it is an important variable in the fertility complex being examined.

TABLE 1.—*Fertility behavior of all Protestant, Catholic, and Jewish couples in national sample and of Protestant and Catholic couples who match the Jewish couples on duration of marriage and selected socioeconomic characteristics*

Fertility and demographic characteristics	Total national sample			Matched groups		
	Protestants	Catholics	Jews	Protestants	Catholics	Jews
Number of cases	1,684	628	66	66	66	66
Mean expected number of births, when family completed	2.9	3.4	2.4	2.4	3.4	2.4
Mean number of births to date	2.1	2.1	1.7	1.4	2.0	1.7
Mean number of children wanted when interviewed	3.0	3.5	2.6	2.8	3.7	2.6
Mean number of children wanted if could start life over	3.4	3.8	3.2	3.2	4.2	3.2
Mean number of children considered ideal for Americans	3.4	3.6	3.1	3.2	3.2	3.1
Mean duration of marriage in years	10.1	8.8	8.5	8.6	8.6	8.5
Mean age in years of wife	29.8	30.0	30.3	30.0	31.1	30.3
Mean age at marriage of wife	19.7	21.2	21.8	21.4	22.5	21.8
ATTITUDE TOWARD USE OF FAMILY LIMITATION METHODS						
Percentage expressing—						
Unqualified approval	73	32	89	92	18	89
Qualified approval	13	12	5	4	12	5
Pro and con	3	6	3		3	3
Qualified disapproval	9	35	3	2	58	3
Unqualified disapproval	1	13		2	9	
Not ascertained	1	2				
Total	100	100	100	100	100	100
Percent who have already used contraception (including rhythm)	75	57	86	83	59	86
Percent who planned number and spacing of all pregnancies	22	9	47	33	14	47
METHODS OF CONTRACEPTION						
Percent of all couples (including nonusers) who have—						
Ever used an appliance or chemical method	67	26	83	78	15	83
Ever used a method unacceptable under Catholic church doctrine	69	29	84	80	15	84
Only used rhythm	5	29	1	3	44	1

Comparisons between the matched groups can be summarized as indicating that the fertility complex for Protestants is very much like that for Jews when they have similar social and economic characteristics, but that this is not true for Catholics. On almost all of the comparisons, the difference between Jews and Catholics is as great or greater when the social and economic characteristics are controlled as when they are not. Apparently, the distinctiveness of Catholic fertility behavior as compared with that of the Jews and Protestants cannot be explained by differences in the background characteristics considered here—at least not at the level set by taking the combination of characteristics of the Jews as a model. This broad summary of the results can be checked by comparing the results for the three religious groups in the original total sample and among the matched couples in Table 1.[5]

Several measures of fertility can be considered. The completed family size expected by wives in the total sample is significantly lower for Jews than for Catholics, and Protestants are in an intermediate position. In contrast among the matched couples, the Protestants expect the same low figure as the Jews, but the Catholic figure remains unchanged at the high level. In the total sample,

[5] See footnote 14, p. 66.

actual mean number of births to date is lowest for the Jews and higher at the same level for Catholics and Protestants. (Fertility to date is the same for Catholics and Protestants in spite of the fact that the Catholics married later. They had the same number of children as the Protestants in a shorter period of time. There is reason to believe that Catholics will have more children than the Protestants by the end of the child-bearing period.[6]) In the matched groups, Protestant fertility to date is even lower than that for Jews, but Catholic fertility is high—considerably above that for either Protestants or Jews.

Each wife was asked several questions to ascertain how many children she wanted at the time of the interview in 1955. After matching, the mean value for Protestants is closer to the low Jewish figure, but the mean value for matched Catholics is even higher than that for all Catholics. Wives were also asked: "How many children would you choose to have if you could start your married life all over again and have just the number of children you would want by the time you are 45"? This was intended to give some indication of the respondents' personal ideals for family size in situations not too closely limited by their actual family history. Again here, the mean value for Protestants is identical with the lower figure for Jews after matching, while the Catholic mean value is even higher than it was before.

The measure for Catholics is close to that for Protestants and Jews for only one of the fertility values: the attitude on what is considered the ideal size of family for Americans in general. In this case, the mean values are very similar for the three matched groups, although they vary in the expected manner in the total sample.

Attitudes toward the use of family limitation by the general population are rather similar as between all Protestants and Jewish wives but Jews indicate the strongest approval. Catholics are much more likely to express disapproval or to qualify their approval. After matching, the attitude distribution of Protestants is even more similiar to that for the Jews, but the Catholics are even more different, a larger proportion expressing disapproval.

With respect to the proportion who have used contraception to date,[7] matching brings the Protestant figure much closer to the high Jewish figure but increases the Catholic figure very little.

In the total sample, the Jewish couples are much more likely than couples of either of the two other groups to have planned the spacing and number of all their children by means of contraception.[8] After matching, the proportion of such planned families rises sharply among the Protestants toward the Jewish figure but the Catholic proportion rises only slightly.

The types of contraception used also are more similar for the Jews and matched Protestants after controls, while the practices of matched Catholics are even more distinctive. Thus the matched Protestant and Jewish groups are much more similar in the proportions who have ever used an appliance or chemical method of contraception. These methods, forbidden to observant Catholics under church doctrine,[9] are even less frequently used in the matched Catholic group than in the original sample. The proportion of Catholics using any method forbidden under church doctrine is less than half as large in the matched group as in the total sample. This is certainly not consistent with the view that Catholic adherence to church doctrine on these issues results from their distinctive distribution in respect to the social and economic characteristics considered in this analysis.

The general results of this analysis appear to be consistent with the hypothesis that Protestant-Jewish differences in the variables of the fertility complex are

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[6] For a fuller discussion of this point, see Freedman, Whelpton, and Campbell, op. cit., p. 275.

[7] Many of the couples who have not yet used contraception will do so in the future if we judge either on the basis of their own reported intentions or on the basis of the experience of the older women in the sample. A significant number of the couples in all three religious groups have not used contraception because fecundity impairments made such control unnecessary. The term, contraception, is used here interchangeably with the term, "family limitation," to refer to any method of avoiding conception, including mechanical or chemical methods, coitus interruptus, or "rhythm." It does not include abortion.

[8] Here we are referring to couples who only conceived when they discontinued the use of contraception in order to have a child.

[9] Roman Catholic doctrine forbids the use of mechanical or chemical contraceptives or coitus interruptus. The "rhythm" method is permitted under certain conditions. For a fuller statement of the Catholic position, see Freedman, Whelpton, and Campbell, op. cit., Appendix A, pp. 415–419.

a function of differences in a few strategic social and economic background variables. When these background differences are controlled, the differences in the fertility complex are greatly diminished, disappear, or are even reversed.

However, the unique values of the fertility complex of Catholics cannot be explained in this simple way. Not only do their characteristics persist, but the differences are more likely to be increased than decreased when the effect of the specific social and economic characteristics in this analysis is controlled.

We have not controlled for the degree of involvement in the religious community in the matched comparisons shown in Table 1. In this analysis the respondents are classified as Catholics, Protestants, or Jews simply on the basis of their self-identification with one of these major religious divisions in response to a rather simple question about religious preference. Strictly speaking, then, we have not examined the effect of the religious communities on their close adherents, because many more Catholics than Protestants or Jews are closely attached to the formal rites and institutions of their religion. We have been examining the effect of the religious groupings as they now operate in the United States on their broad constituencies—whether weakly or strongly identified. This seems to us to be a more significant approach than one which would center on a comparison of the large group of Catholics closely identified with their church and the much smaller groups of Jews and Protestants who are closely attached by comparable criteria.

Nevertheless, it is quite unlikely that the differences between Catholics, on the one hand, and Protestants and Jews, on the other, would disappear even if they were matched on such a criterion as frequency of church attendance. Neither the Princeton Study nor the Growth of American Families Study (GAF) found any significant variation in fertility behavior in relation to church attendance or indices of religious interest for non-Catholics. Among Protestants, major denominational differences are not related to major differentials in family planning practices. Catholic fertility and family planning do vary in relation to church attendance in the GAF study, but even the Catholics who report attending church "seldom or never" are markedly different (in "Catholic" directions) from non-Catholics for the major fertility variables considered in the GAF study.

The matching procedure used in our analysis does select Catholics more committed to the church; 86 per cent of the Catholic wives in the matched group reported regular attendance at church compared with 68 per cent in the original sample of Catholics. However, if we consider only the nine matched pairs for which the Catholics report less than regular church attendance, there are still very marked differences between Catholics and Jews: (1) the average expected number of children is 3.0 for Catholics and 1.9 for Jews, (2) live births to date average 2.3 for Catholics and 1.2 for Jews, and (3) 67 per cent of the Catholics and 88 per cent of the Jews approve the practice of family limitation without qualification.

Philip Sagi has pointed out,[10] on the basis of the findings of the Princeton Study that matching Catholics with the relatively well-educated Jewish group selects those Catholics who are most likely to be conforming to Catholic values about fertility, because: (1) Catholics who are well-educated are most likely to have most of their education in Catholic schools, and (2) Catholics who have extensive religious education are most likely to adhere to Catholic religious values about fertility.

Thus, Catholic religious education may be the factor which immediately explains the persistence of distinctive Catholic fertility patterns even under the impact of greater urbanization and higher status. While this explanation clarifies the problem, it does not eliminate it. We must still explain the strength of Catholic religious education. In the theory predicting elimination of Catholic-Protestant differentials, urbanization and increasing status for Catholics were expected to reduce their loyalty to distinctive Catholic values and institutions in general—not simply in the area of fertility. It may be that an explanation of the distinctiveness of Catholics with respect to fertility can be found only in a more general explanation of the continuing strength of American Catholic institutions and ideology.

The Catholic sub-culture involves an explicit and distinctive ideology about the fertility complex. In general, Jewish and Protestant groups have no special religious ideology on these issues. It may be that with more precise measure-

[10] This interpretation was suggested by Philip Sagi in discussing this paper at the annual meetings of the Population Association of America in May, 1960, in Washington, D.C.

ments of the variables for a larger sample,[11] or with the addition of other variables the distinctive Catholic position could be "explained away." The results obtained conceivably may depend on the particular weighting of the controls used for matching—those characterizing the Jewish group. This particular model was selected because it is the direction in which the general population appears to be moving with respect to urbanization and socio-economic status. Matching on the model of the Protestant or Catholic combination of background characteristics might produce different results. This will be explored in later work. But assuming that further work supports the results presented here, we are left with the question of why the specific Catholic ideology has arisen and has been maintained. Presumably it has on origin and a function which are not to be explained in any simple way by the variables treated here.

These results for the fertility complex are consistent with those for Catholic-Protestant differences in behavior and ideology obtained by Gerhard Lenski in a study in the Detroit area.[12] For a rather wide range of behavioral and attitudinal variables the Catholic-Protestant differences persist even when groups of similar social and economic status are compared.

Lenski finds that members of each major religious group tend to associate in primary groups mainly with people of their own faith. The existence of these partly closed religious communities within the larger community perpetuates and reinforces whatever unique values and ideologies the religion carries with it. In the case of the Catholics this no doubt includes distinctive values about family planning and fertility.

The Growth of American Families study calls attention to one subgroup in which Catholic-Protestant fertility and family planning differences are very small—the families in which the wife had worked a long time (at least five years) since marriage. In this subgroup, Protestants and Catholics tend to converge with respect to expected family size, attitude toward the use of family limitation methods, and the type of methods used.[13] If we interpret long work experience as facilitating the involvement of Catholic wives in groups outside the closed Catholic subcommunity, this result is consistent with the hypothesis that distinctive Catholic fertility behavior tends to disappear when the barrriers between the religious subcommunities are reduced. However, this relationship may also be a matter of selection, at least in part, i.e., Catholic wives who previously have acquired non-Catholic fertility values will be most likely to work. The selection hypothesis is supported by the findings of the Princeton Fertility Study that Catholic wives who have had little or none of their education in religious schools are most likely to work after marriage and resemble Protestants in their fertility behavior. Since only a small proportion of either Catholic or Protestant wives aged 18 to 39 years had worked five or more years since marriage, adding the wife's work history to the list of controls in the matching processs would not have changed significantly the comparisons between the matched groups that are presented above.

We found earlier that controlling simultaneously on five socio-economic characteristics virtually eliminated the Protestant-Jewish differences on the fertility measures. To assess the extent to which each of the characteristics contributes to this result will require a different kind of analysis which we plan to carry out and report in a later paper. However, we can report some exploratory work in which matching procedures were used to test the hypothesis that one or a few of the characteristics could produce the observed results. This did not prove to be the case. When each of the socio-economic characteristics was controlled alone by matching, the Protestant values moved toward the Jewish values in a rather similar way, with income taken alone having the least effect and educa-

[11] The consistent results obtained in this study make this seem unlikely. As a check on the possible effect of matching more exactly on all the variables simultaneously, we considered only the 35 Catholics who matched the Jewish group on all the characteristics. The differences between Catholics and Jews were substantially the same for these 35 cases as for the larger group of 66 cases less completely matched. It is conceivable that the concentration of the Jewish population in New York City may influence the results.

[12] The results of Lenski's research, part of the continuing program of the Detroit Area Study of the University of Michigan, appear in Gerhard Lenski, "The Religious Factor: A Sociological Study of Religion's Impact on Politics, Economics, and Family Life," Garden City, N.Y.: Doubleday & Co., 1961.

[13] Similar results were obtained in a study in West Germany. See R. Freedman, G. Baumert, and M. Bolte, "Expected Family Size and Family Size Values in West Germany," Population Studies, 13 (November 1959), pp. 136–150.

tion and occupation taken alone having the most. However, when we matched simultaneously on all the characteristics except income we found that the Protestant values were not moved as closely to Jewish as in our complete matching procedure. Apparently, income does have an effect not covered completely by the other variables. All of the characteristics appear to have some effect on the final result of close similarity but the independent effect of each cannot be assessed adequately by matching.

The emphasis in this analysis on the differences between Catholics and non-Catholics should not lead to an exaggeration of religious differentials in fertility and family planning. From some points of view the similarities are more striking than the differences. For example, none of the major religious groupings can be characterized as having very large or very small families. Like the other major strata of our population, they place a high value on moderate size families (two to four children). A large majority of Catholics as well as of Protestants and Jews use some form of conception control sometime during the child-bearing period, and many Catholics are using methods of contraception forbidden under Catholic church doctrine. Nevertheless, significant differences remain, and statements that Catholics are fully adopting the Protestant family planning practices are not correct. Moreover, the present analysis seems to indicate that the persistent differences are unlikely to disappear simply as a result of movement to higher socio-economic status among the Catholic population.[14]

Exhibit 13

Worldwide Fertility Trends

[Moderator's statement delivered at the United Nations World Population Conference, Belgrade, Yugoslavia, 30 August to 10 September 1965]

(By Ronald Freedman, University of Michigan Population Studies Center)

INTRODUCTION

1. Fertility now is the most problematic and, potentially, the most dynamic factor in demographic change. Mortality is either very low or falling rapidly all over the world. We have the technical means to reduce mortality to very low levels almost everywhere, and it is likely that we will do so. In the case of fertility there is both less knowledge and less consensus on policy, although this, too, is in the process of change. Given the high probability that mortality will continue to decline rapidly on a world-wide basis, fertility will be the problematic factor for population growth rates. The importance of fertility is further enhanced by the rather recent knowledge that age-structures depend much more on fertility rates than on mortality rates. Since age-structures are of profound demographic and social significance, this makes knowledge of fertility dynamics even more important.

2. The countries of the world now are divided into two distinct high and low fertility groups. The high fertility, less developed countries, including about two-thirds of the world's population, have gross reproduction rates above 200 and birth rates usually well above 30. The other group of more developed countries, has birth rates usually well below 30 and gross reproduction rates well below 200. A United Nation's study referred to in the paper by Gille [1] finds that fertility divides the less developed from the more developed countries more consistently

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[14] A final note on tests of significance may be in order. In both the total original national sample and the matched panels the differences between Protestants and Catholics, on the one hand, and Jews, on the other, were tested to determine whether they were statistically significant. In the initial sample the mean values for both Catholics and Protestants were significantly higher than for the Jews on all the fertility measures listed and the distribution of Jews was significantly different from that of Catholics and Protestants on the measures involving percentage distributions.

In testing the differences between the matched groups in Table 1 for sampling variability, the correlation between matched pairs was taken into account. In this instance the clustering in the original national sample was ignored since the selection procedure for matching eliminated the clustering effect. All the differences between Catholics and Jews remain significant at the .05 level, except for two cases. (The difference in number of births to date is significant at the .10 level and the difference for ideal family size is negligible.) None of the differences between Jews and Protestants is significant after matching, except the difference in the proportion who planned the number and spacing of all their pregnancies. In the matched groups all the differences between Protestants and Catholics are significant at the .05 level, except the two already noted for Jews.

and more completely than any other single available indicator. This division into the high fertility and low fertility groups involves quite a sharp distinction at present. The fertility rates do not form a continuous distribution at all. (See Tables 1–3.)

3. As Ryder points out, [2] all of the low fertility countries have been in the high fertility range relatively recently, and in most cases, no more than 50 to 75 years ago. The existence of a group of low fertility countries is a recent phenomenon in human history.

4. While the two groups of countries are most clearly differentiated from each other, there are considerable variations internally within the two groups. High fertility countries are not at some uniform level of maximum fecundity. Few societies ever have approximated the biological maximum. There is now and probably always has been a considerable variation from moderately high to very high fertility in these countries associated with biological, social and cultural differentials. The more developed countries are more homogeneous and are now converging toward rather similar fertility patterns, but considerable variation still remains among them too.

5. There is a great challenge to demographers in the opportunity to study existing and past fertility differentials and to observe those now emerging. Much more information is needed about the factors accounting for the distinctive low fertility of the more developed countries. What accounts for their decline to lower levels distinctive from the rest of the world? What accounts for the internal variation in fertility among important strata *within* various countries and are there any general principles that govern these variations for many countries? Finally, what are the prospects for fertility decline in the developing countries and what role do organized family planning programs and general development programs play in such fertility declines?

6. While the papers presented at this conference make many contributions to our understanding of such questions, our knowledge is still rather limited. This paper cannot hope to summarize all the findings of the papers on fertility. It cannot provide systematic answers to all the questions I have raised, since the complete data for the answers do not exist yet. Much of my discussion is necesarily in the form of stating plausible general hypotheses consistent with existing knowledge but requiring further investigation. Fortunately, most of these problems can be investigated empirically now and in the future.

A FRAME OF REFERENCE [3]

7. Attempts to explain variations in fertility are made difficult by the large number of factors operating at different levels to affect fertility. One broad scheme to classify the important sets of variables is shown in Figure 1. Taking fertility as the end point (measured either on a cohort or a period basis):

A. *There is a limited set of variables through which any social or environmental variables must act to affect fertility.* These are what Kingsley and Judith Davis [4] call the "intermediate variables." They include:

(1) Factors Affecting Exposure to Intercourse ("Intercourse Variables"):

(*a*) *Those governing the formation and dissolution of unions in the reproductive period.*

(i) Age of entry into sexual unions.

(ii) Permanent celibacy: proportion of women never entering sexual unions.

(iii) Amount of reproductive period spent after or between unions.

a. When unions are broken by divorce, separation, or desertion.

b. When unions are broken by death of husband.

(*b*) *Those governing the exposure to intercourse within unions.*

(iv) Voluntary abstinence.

(v) Involuntary abstinence (from impotence, illness, unavoidable but temporary separation).

(vi) Coital frequency (excluding periods of abstinence).

(2) *Factors Affecting Exposure to Conception ("Conception Variables"):*

(vii) Fecundity or infecundity, as affected by involuntary causes.

(viii) Use or non-use of contraception.

a. By mechanical and chemical means.

b. By other means.

(ix) Fecundity or infecundity, as affected by voluntary causes (sterilization, subincision, medical treatment, etc.).

(3) *Factors Affecting Gestation and Successful Parturition ("Gestation Variables"):*

(x) Foetal mortality from involuntary causes.

(xi) Foetal mortality from voluntary causes.

Any explanation of fertility trends and variations must include as a final step in the causal sequence changes in one or more of these "intermediate variables."

B. *Social norms exist in every society about what fertility ought to be, about child-spacing, the age at marriage, and about the other important intermediate variables.* These norms have an influence on the intermediate variables and through them on fertility. Presumably the norms are influenced deeply by the social and environmental setting of the society.

C. *The social and economic structure of the society is certain to have profound effects on the other sets of variables.* How many children are considered desirable in a society and what is done about marriage and family building are questions affecting profoundly so many aspects of the society that it would be a sociological and logical paradox, if reproductive patterns were not closely related to the nature of the society and its values.

D. *Mortality affects fertility in various ways.* Perhaps the most important is by determining how many children must be born on the average if a family is to have any given number survive.

8. With this framework in mind let us first consider factors associated with the unprecedented modern fertility declines in the more developed countries. Since this is relatively recent, it should provide also clues as to the basis for the differences between the low and the high fertility countries.

FERTILITY TRENDS AND DIFFERENTIALS IN THE MORE DEVELOPED SOCIETIES

9. The practice of contraception and induced abortion probably are the major factors responsible for the unprecedented modern fertility decline in the more developed countries. We can only say "probably," because the historical data on the various "intermediate variables" are scanty. However, most scholars probably would agree that the increasing use of contraception and abortion has produced the modern fertility decline. In only one or two countries has a higher age at marriage been responsible. There is no evidence that variations in the other intermediate variables have played a major role, although such factors as age at marriage may be important in differentiating particular low fertility countries from each other.

10. There is scattered evidence of the importance of illegal induced abortion in the early stages of the fertility decline in countries of the Western European tradition. [5] Abortion appears to become important in almost every country to some extent in the period of transition from high to low fertility when mortality declines and families face the problems of providing rising standards of living for an increasing number of surviving children just when the role of children in economic production is decreasing. Our knowledge of this situation unfortunately is limited. The first really systematic data on the role of abortion in different strata of the population is coming from those countries which have legalized induced abortion and especially in recent research from Hungary and Czechoslovakia. [6] The paper by Klinger demonstrates the profound effect which abortion has had under the influence of abortion legislation in European socialist countries. Unfortunately, we know little about the character, volume, and correlates of the prior, clandestine and illegal abortion which seems to characterize every country in the transition from high to lower fertility.

11. In most of the countries of Western European tradition an increasing use of contraception was associated with and probably accounts for the major declines in fertility. [7] Contraception is being practiced fairly widely also in the countries which have legalized abortion, and in every case the policy appears to be to encourage a shift from abortion to contraception. It is likely that there continues to be a very considerable number of illegal induced abortions in some of the European countries in which both abortion and contraception are illegal. It is otherwise difficult to account for the very low birth rates prevailing in some of these countries in which sample surveys indicate relatively little use of the more effective contraceptives.

12. The fertility declines have generally occurred first among the women over 30 years of age and then spread to younger wives. This is well illustrated by Vielrose in his paper, indicating such age patterns in both rural and urban areas of Poland, although with large declines first in the urban areas. [8] This age

pattern may be expected everywhere in fertility decline if as a result of lower mortality and rising living standards women by age 30 or so find that almost all of their children survive and they seek some means to limit further family growth in view of rising standards of living.

13. None of the major fertility declines has resulted primarily from an organized or deliberate program by governmental or private agencies. The earlier declines in Western Europe and the United States resulted from individual decisions by millions of couples in response to pressing problems arising in the process of modernization. [9] It is true that more recently birth rates have fallen very rapidly in a number of countries following the government legalization of induced abortion. However, in every case these events seem to have been a response to already existing popular demand and pressure and an attempt to transfer an already existing large volume of illegal induced abortions to medically safer institutions. Such a general view is presented by Y. A. Sadvokasova and M. Muramatsu. [10] To be sure, the fertility decline was much more rapid following the organization of the legal system for induced abortion. However, generally it is agreed that this system was not initially developed by the governments concerned to reduce birth rates or even to provide family limitation services to a population previously unwilling or unmotivated.

14. To say that past fertility declines have not been primarily a result of an organized public policy does not mean logically that such a public policy cannot succeed. History does not tell us that such policies have been tried and failed. It only tells us that such policies have not been tried and that declines can occur without them under proper circumstances.

15. What are the social and environmental causes which led to the use of abortion and contraception for limiting family size and thus to declining birth rates? There is a wide agreement, I believe, that the crucial forces were declining mortality and a complex of factors making for social and economic development. [11]

16. Lower mortality is plausibly a cause of lower fertility since if fewer children die fewer need to be born to have any desired number survive. When mortality falls, and especially if it falls quickly, there is likely to be increasing pressure in individual families on traditional housing, familial and other arrangements developed over long periods of time as an adaptation to high mortality. The less developed countries generally have had much higher mortality than the more developed, and mortality decline has usually preceded fertility decline, sometimes by quite a number of years. However, there are instances in which fertility declined prior to or simultaneous with mortality decline. A legitimate research question is whether planned family planning programs can produce fertility declines prior to or at least simultaneously with mortality declines. While advocating vigorous action to reduce mortality, it is possible also to argue for simulaneous programs of family planning. Adil and Raina refer in their papers [12] to the two largest governmental programs for family limitation—those of Pakistan and India. They detail plans for carrying out and evaluating these programs. It may be desirable to make family planning available early in the development process to reduce the lag between the decline in mortality and fertility. Personally, I doubt that such a program can be very effective until significant numbers of married couples feel reasonably certain that a number of living children they want will survive, if born, and until they observe about them and experience, themselves, the problems of excess fertility, when mortality is low.

17. Certainly I may be wrong in this view, and the consequences are serious. It is desirable to minimize the amount of individual suffering and the social costs of the transitional period. Now that mortality falls so much more rapidly than formerly and since we know so much more about family planning, the possible courses of action may be different than formerly. It might, therefore be desirable to have experimental tests (trying to use the best family planning programs in field organizations under varying mortality conditions that exist now or are developing. This does not require any retardation of efforts to reduce mortality. It only means taking advantage in empirical studies of the existing variations in mortality levels and changes.

18. Most scholars also agree, I believe, that the large modern fertility declines have been associated with various types of modernization and development. The United Nations has recently completed the impressive review to which Gille refers of how current fertility rates are related to various development measures. It reports that a large variety of measures of development sharply distinguish

the high from the low fertility countries, but that there is practically no correlation between the development and fertility measures *within* each of these two groups of countries. The United Nations offers the interpretation that a combination of development measures must pass a minimum threshold level to make low fertility possible under historically observed conditions. This is plausible. However, we have no firm knowledge of how much change in which development variables is necessary for one or another rate of fertility decline. Further, we do not know very much about why changes in particular combinations of variables should affect fertility.

19. Many variables have been stated in the various papers of the conference as linking development to fertility decline. These include urbanization, industrialization, more complex technology, higher living standards, income growth, better health, more participation of women in the labor force, an increase in mass communications, higher education and literacy levels, and many others. It is not possible to discuss each of these possibilities. Instead, I will first present some broad hypotheses which place the specific variables in a more general context. Then, I will discuss some of the important development measures discussed in conference papers.

20. At least with respect to fertility decline, I suggest that what is essential in the development process everywhere is the shift from major dependence on relatively self-contained local institutions to dependence on larger social, economic, and political units. An essential aspect of the development of modern industrial society is an expansion of the size of the effective units of interchange and interaction of all kinds. Such a change implies a change in the division of labor—both social and economic—from one in which the kinship unit is necessarily central to a larger complex in which such local units as family and village give up many functions to larger non-familial specialized units. The less-developed, high-fertility societies are distinguished historically from the low-fertility more-developed societies by the extent to which the things considered worth having are derived from local kinship-based institutions and especially from children. I suggest as a hypothesis that the threshold combination of development changes necessary for fertility decline is that which will produce both low mortality and a sufficient erosion of the importance of kinship and the local community to make important aspirations attainable in ways for which high fertility is irrelevant or burdensome.

21. Now let us turn to some specific variables. An increasing participation of wives in the labor force has been noted in the papers by Y. A. Sadvokasova and L. M. Davtyan [13] and in many other studies as associated with lower fertility. Of course, women do work in the fields and elsewhere in the high fertility countries, too. What is distinctive now is that women increasingly are in work and other organizations and situations which are not based on familial ties. Although they are usually working for the welfare of their children and families, more than a limited number of children is likely to be an impediment to work and to other new activities of women. The children have no role in the economic enterprise in which the wives or their husbands are employed. In one sense the recent increase in labor force participation by wives only accentuates the earlier effect of the shift of the male labor force from family-based economic units to factories and other economic units organized on other bases. Generally, both working wives and husbands have lost any incentive to have children in order to staff a familial economic unit.

22. Many papers in the conference refer to the role of education, literacy, and mass media communications in reducing fertility. What is the causal connection? One plausible explanation suggested by Professor Heer [14] and others is that those who are literate and in active communication networks are able to receive information about the ideas and means of family limitation. This is very probably correct, but the role of education, literacy, and communication may be more basic.

23. I suggest that with increased education and literacy the population becomes involved with the ideas and institutions of a larger modern culture. If the individual is, or believes he is, part of a larger non-familial system, he begins to find rewards in social relationships for which large numbers of children may be irrelevant. If this thesis is correct, major expenditures for education in a development program are justified not only for developing worker skills but also for their potential effect on the fertility level, of lower fertility is a social objective.

24. It is pertinent that in every country for which we have empirical evidence so far, the spread of family planning practices to attain a smaller family has

been associated with a literate audience influenced by the mass media and by a person-to-person communication of their message that transcends local boundaries.

25. Such family planning programs as those described by Adil and Raina are now being begun in many other developing countries in which literacy is still relatively low. In each case, while increasing literacy is a national objective, the aim is to lead the population to practice family planning even before high literacy rates are established, if possible. The degree to which this is possible and under what circumstances is an important research question.

26. I do not believe that education about fertility and family planning alone, completely in advance of other changes in the society, can be very effective for changing fertility norms and behavior. Such a single specialized educational program alone does not affect the linkage of the local population to the larger units in the broad and continuing way which can lead to the essential growing dependence on non-local and non-familial institutions. General education and literacy probably are required to do this.

27. High fertility norms and behavior may be too deeply embedded in traditional, emotionally supported institutions—especially the familial—to be effected much by education or informational program centered on fertility alone. This is not to deny the potential importance of such programs, once development is underway. Probably, reduced mortality sets the stage, providing the minimal threshold level required before fertility will drop. But, in addition, there must be at least minimal changes in the institutions which motivate high fertility by rewarding parents of relatively large numbers of children. There must be reason for parents to believe that those who have smaller families can meet their needs in ways differing from the traditional patterns.

28. This view does not preclude the possibility that broad gains in literacy and education can facilitate lower fertility levels in advance of some other changes in the society. The extent to which this is possible and what associated changes are required is still an open question. Significant studies with careful controls are possible in some of the countries introducing family planning to test whether particular levels of literacy or of other development indices are a necessary threshold to a fertility decline.

29. Obviously, changes in literacy, education and communication networks are related to many other aspects of development. Changes in all of them probably are related in interaction to fertility decline. But it is unnecessary to assume that all aspects of development must move together. We know that there have been uneven rates of movement in the past. From a policy point of view, it is desirable to look for some elements subject to social control which might lead the development process and decrease the time-gap between mortality and fertility decline. I have emphasized education because it might be such a leading variable.

30. Heer provides some interesting data to support the hypothesis that when other things are equal countries with higher per capital income will have higher fertility than those with lower income. There is other evidence supporting this view in the studies within some of the industrial countries. [15] Professor Heer suggests that increases in income, therefore, may result in some circumstances in higher rather than lower fertility. There is some evidence of rising fertility in the early development stages in some countries. [16] While it is dangerous to generalize from cross-section data to changes over time, the hypothesis is worthy of further investigation.

31. Urbanization also has been mentioned often in the papers for this session as an important factor in reducing fertility in a variety of countries. However, there is also some evidence that in some developing countries there may be no urban-rural fertility differentials. [17] Living in large population concentrations in these cases does not necessarily make for lower fertility. This raises the question as to what character urbanization must have to be associated with lower fertility. In terms of my earlier general hypothesis, I suggest that urbanization leads to lower fertility only if it involves a change in social arrangements toward lesser dependence on traditional familial units and more dependence on new, modern, non-familial institutions. Some fairly large cities in developing countries are simply large collections of traditional familial and other village community units. Sometimes large numbers are still living on family farms within the city limits or are engaged in other small family enterprises where the wife works. In such cases her labor force participation is least likely to lead to lower fertility. In short, urbanization can be expected

to be associated with lower fertility only if it involves the population in modern non-familial social institutions.

32. Once a population has become completely urbanized for a generation we must expect different fertility patterns than are observed during the transition to urbanization. For example, during the process of urbanization the poorly educated and those with low income in cities are likely to consist in large numbers of migrants from the farms. Their characteristic higher fertility may be a function of their rural background rather than of their lower social status. A number of studies in the United States [18] have shown that the negative relationship of fertility and education or income disappears if we consider only those who have lived in cities for a generation. Further as the process of urbanization reaches completion even the small minority of the population remaining on farms have urban characteristics as they are involved with the institutions centered in the cities. In short, the fertility patterns during the process of urbanization now still in process in many countries are likely to be different than in the situation which will prevail when urbanization is complete.

33. N. Ryder points out in his paper that there now is a remarkable convergence in fertility patterns among the more developed countries. All appear to be moving toward a situation in which almost everyone marries at a relatively young age and completes a small family rather early in married life. The fact that marriage is virtually universal and childlessness is rare even with low fertility levels suggests that family life continues to be a very important part of the society. Apparently it is not a dissolution of family life but a reorganization which occurs during the transition to lower fertility.

34. In a large variety of more developed countries there is a striking convergence, too, in the evidence of similar relationships between fertility and specific social and economic factors. In the transition to low fertility the effect on fertility of such factors as income, wife's labor force status, housing conditions, education, and rural background appear to be similar in Western European countries and in the reports at this meeting for example from Poland by Vielrose and the American Socialist Soviet Republic by Davtyan. Purely political-ideological factors seem to be much less important than the socio-economic situation in which families find themselves in determining fertility levels and patterns. Whether a country has a "socialist" or "capitalist" economic system appears to be less important in relation to fertility than its degree of industrialization and modernization in the sense discussed earlier. Since the end of World War II there has been a convergence of the fertility patterns of Eastern and Southern Europe with those of Northwestern and Western Europe irrespective of whether the countries are "socialist" or "capitalist" or some mixture of the two.

35. Y. A. Sadvokasova in her paper advances the interesting hypothesis that in Western "capitalistic" countries fertility is low, because the population feels more insecure than in "socialist" countries. There are some difficulties for this hypothesis in the fact that fertility is lower in several of the socialist countries of Europe than in Western countries regarded as capitalistic. Moreover the little empirical data available does not indicate that workers who are unemployed or have feelings of insecurity have especially low fertility. [19] Further, while the assertion, often made, that there is no unemployment in the USSR may be technically correct, it seems at least possible that as in all other countries, there too, many young people may find some difficulty in finding the particular position they want or feel they deserve at a particular time and place. This may have a very significant effect on fertility and would affect more people than unemployment itself. If the quotation of a recent report from a Soviet journal about studies in Novosibirisk is correct, [20] it seems likely that in the Soviet Union as in other countries, the approaching large increase in young entrants into the labor force (resulting from early postwar fertility rise) might produce at least transitional problems of satisfaction with employment. This is only to say that in all growing, complex, industrial societies with considerable population mobility there are likely to be dislocations and problems resulting from sharp increases in the numbers in particular age groups and particularly for the ages of starting into employment and family life.

36. The crucial demographic aspects of the process of economic and social development seems to be similar whether it occurs under a socialistic or a capitalistic system. In each case there is a decrease of mortality, a decrease of dependence on familial and local traditional institutions, and a growth of interdependence in larger urban-centered social and economic units with an elaborate

division of labor. These developments apparently are followed by a reduction of fertility in a roughly similar relationship to the characteristics of the families defining their involvement in the new modern institutions. The declines in fertility are likely to begin in later ages and then move downward in the age structure. The age structure itself moves toward an "older" population as fertility rates decline. All of these changes seem to be found under a wide variety of political and ideological circumstances.

37. There remain, of course, variations in fertility among the more developed countries, as Ryder points out. The overseas countries of Western European background (Australia, New Zealand, Canada, United States) have higher fertility than most of the other developed countries. The fertility level of the USSR is at an intermediate level among the more developed countries, but is difficult to evaluate because, as indicated by V. P. Piskunov [21], is it affected by an extreme distortion of the sex-ratio resulting from World War II. It seems reasonable, nevertheless, to expect that fertility levels will decline in the USSR towards the levels of Europe generally as the proportion of the population engaged in agriculture declines. If such urbanization is rapid, fertility rates are likely to be further affected by the fact that it always is difficult to provide adequate housing in cities for a mass migration from rural areas.

38. It is rather presumptuous for me to be making projections for the future trend of the fertility in the USSR. It would be of great value to have some comments from Mr. Piskunov and other scholars of the USSR on their best estimate of how the correction of the temporary sex-ratio distortion may be balanced by such other trends as urbanization and increasing consumption standards in its effect on fertility rates.

39. Mr. Fagley's review [22] of the role of religion in relation to fertility in the more developed countries is consistent with a view that religious organizations and beliefs are likely to have followed rather than led the way in the fertility declines in the modern world. On a cross-national basis, there seems to be little correlation at least between formal differences in religious classification and the timing of the fertility decline, with Catholic countries, for example, appearing both first and last in a ranking by the time of the fertility decline. Nevertheless, within certain developed countries (e.g., the USA and the Netherlands) there are significant and persistent differentials in fertility patterns by religious groupings which do not appear to be a function of the social or economic position or the urbanization of the members of the religious groupings. [23] Mr. Fagley stresses the necessity for distinguishing between formal docturine, actual belief, and actual behavior of various religious groups.

40. More research is needed to explain the remaining differentials among the more developed countries. The papers of this conference give increasing evidence that we can obtain from developed countries with widely differing political organizations comparable evidence on how specific situational factors affect fertility and the family-building cycle. It seems likely that variations in family allowance systems, maternal care, and various social security provisions might well have some effect on fertility rates. We need more discussion on the evidence and needed research on how such differences between countries affect the fertility of couples of similar educational and economic positions.

41. In discussing fertility in either the developed or the developing countries, problems of measurement are of great imporance. The paper by Darsky-Tolchinsky [24] reminds us that the cross-section, period measures most frequently used may be misleading and certainly are incomplete. He suggests that parity-specific birth probabilities, mortality, and marriage data can be combined in relation to stable population models.

42. Bourgeois-Pichat, [25] in the course of dealing with the effect of fetal mortality or fertility has presented a model and set of illustrative data for estimating birth spacing and reproductive levels when family limitation is not practiced. Even under these simplified conditions data are required for estimating separately for each age-group the level and timing of fetal mortality, the period of amenorrhea, and the mean conception delay. As Bourgeois-Pichat indicates, his model was tested with fragmentary data pieced together from various places, because nothing more is available. Research under various conditions to determine these and other basic fertility parameters is now possible and would seem to deserve high priority, if we are to understand the basic mechanisms of the various radical shifts in fertility now underway and to be expected. I suggest, however, that even in high fertility countries these parameters are not observed

in a "natural" state. They are affected almost everywhere by various practices that affect fertility, quite apart from contraception.

43. The proposals by Adil for evaluation of family planning programs raise many interesting measurement problems. Particularly useful may be the suggestion of measuring for itself and as an exposure base the number of months since last birth. There is evidence that the interval since last birth—the "open interval"—will lengthen first in developing countries and will differentiate the more modern from the less modern strata.

FERTILITY TRENDS IN LESS DEVELOPED COUNTRIES

44. While fertility is high in less developed countries, it is by no means at a uniform level approaching the biological maximum. Fertility varies from moderately high to very high and the recent United Nations report on fertility shows a considerable variation in fertility among these countries. It also finds no correlation among them between measures of development and fertility levels. For particular countries it is possible to say that specific intermediate variables make fertility relatively high or low. However, we have no systematic evidence for most countries on the levels of these intermediate variables and even less on how they are related to social and economic factors.

45. Accelerating fertility declines to a point as early as possible in the development process is advocated by many, not as a substitute for general development efforts but as an aid to it. A cogent and widely known statement of this view by Coale and Hoover [26] develops the argument that savings rates, investment, and improvements in per capita income and production will be greater if fertility declines at an early point in the development process. The argument is not necessarily that development will not occur without a fertility decline but that it will be accelerated and that the individual suffering during the transitional period can be minimized if fertility declines at an early point in the process. F. Lorimer [27] in his paper for this session also attempts to show that, theoretically, lower fertility and later child-bearing will produce more favorable consumption-production relationships. However, he also indicates that under high mortality conditions high fertility does not necessarily have such effects.

46. Even if one accepts the thesis that an early fertility decline is a desirable aid to development, it does not necessarily follow that this is possible. In assessing the possibility of fertility decline in the less developed countries an important but complex question is whether general social and economic development will itself produce fertility declines without organized family planning programs. Can organized family planning programs have an effect prior to certain amounts or kinds of social and economic change? If not, can such programs at least shorten the time lag between the decline of mortality and the decline of fertility?

47. As I understand the interesting statement by Sadvokasova, the view is advanced that fertility will decline only after lower mortality and social and economic development brings the mass of married couples to a situation in which they want to limit family size and so they adopt the practice themselves, without significant social programs for this purpose. She bases her view partly on the history of fertility declines in European populations and in Japan. I agree with her that probably in none of these historical cases was an organized family planning program primarily responsible for the decline in fertility which occurred.

48. Nevertheless, none of this evidence tell us what would have happened in the European countries or in Japan if there had been organized family planning programs at earlier points in their histories. Once urbanization and industrialization was well underway and mortality fell, there was a period of considerable individual distress and dissatisfaction in family problems in all countries, whether socialist or not. This is evident in the fact of a considerable rise in the number of illegal abortions, poor contraceptive practices and other evidence that many families were trying rather desperately to solve their new problems in their new social situation. Is it not likely that if an organized and rational family planning program had been available at a somewhat earlier time that much individual family suffering would have been avoided and that birth rates might have fallen shomewhat sooner? The fact that fertility rates have fallen so rapidly after official government approval of legal induced abortion programs in Japan and a number of European countries certainly suggests that the social and economic changes had made many families ready for family limitation at an earlier period but that the necessary information and services were not yet readily available. In the less developed countries mortality rates fall so much

more rapidly than before that the problems of rapid family growth in the transition become acute much more quickly than was formerly the case.

49. Most people concerned with policy issues will agree, I believe, that family planning programs are not a substitute for basic general development programs, which should be pressed forward vigorously if higher living standards are desired. The point in question is at what stage of development such family planning programs can be effective and useful.

50. One extreme view is that high fertility countries have always been ready for family limitation, but that they failed to practice it because they lacked the necessary information or means. Not many hold this point of view now, since there is some evidence indicating that simply making contraceptives available in very traditional village populations in less developed countries does not lead to large scale effective use.

51. Most scholars would agree, I believe, that a certain amount of social and economic development is necessary before there will be widespread adoption of family limitation, either as a result of a government program or individual action. But the question of how much development is needed and of what specific kinds is still controversial and can be settled finally only empirically.

52. Some have suggested that most peasant populations are ready now to adopt family planning or other innovations, because the essential social change has already occurred [28]. The argument is that increases in mass communications and similar changes have stirred rising aspirations and readiness for change even in populations in which the objective social and economic changes, literacy, etc., are not very advanced. Such views can be tested by experimental studies in connection with the new programs being developed in many countries. Are changes in how people perceive themselves and their world a sufficient basis for fertility decline prior to substantive changes in their objective social and economic situation? For example, suppose that the members of a peasant population are linked to the wider world through the mass media or education. Suppose that they begin to identify themselves with institutions and ideas and social roles outside of the local, the familial, and traditional context. Is this a basis for fertility decline before the institutions in which they actually live are changed? I don't think so, but these are questions which can and should be tested empirically in some of the new national family planning programs.

53. My own speculative hypothesis is that family planning is unlikely to be widely adopted in any country until there has been a significant mortality decline and until there has been enough social and economic development to lessen dependence on local and familial institutions and make smaller families more rewarding than larger families. But, I do not think we know how much development and in what specific variables is necessary, although I would give educational and communication developments considerable emphasis. Once a threshold stage of development is reached I would expect that well organized programs and especially those using the newer, effective, and easily used contraceptives could spread family planning fairly rapidly and shorten the transitional period of confusion and trouble.

54. It is difficult to discuss systematically actual recent trend in fertility for the less developed countries, since comparable data over time often are not available for many countries. However, the data presented by Gille make it seem likely that there have not been major changes for most of these countries.

55. There is some evidence that fertility has increased somewhat in some of the less developed countries. There is a potential for such increases in other countries, too, in health and nutritional improvements which may reduce fetal mortality and subfecundity. Such temporary increases in fertility might also result from modernization which changes traditional practices such as prohibition of widow remarriage or ritual periods of abstinence.

56. There is also evidence in some of the less developed areas of the beginning of fertility decline which will come eventually in many other places. The decline is probably best documented for Taiwan where birth rates have fallen 17 percent from 42 in 1958 to 35 in 1964. [29] In Hong Kong, birth rates fell below 30 for the first time in 1964 from 32 in 1963 and 38 in 1958. In Singapore birth rates have fallen from 44 in 1956 to 35 in 1962. A recorded decline in Puerto Rican birth rates from 41 in 1945–49 to 31 in 1963 is difficult to interpret because of the effects of migration, but it is likely that a genuine fertility decline has occurred there, too. We cannot document directly a fertility decline in South Korea from the vital statistics which are sadly deficient as in most

high fertility countries. Nevertheless, it is highly probable that the birth rate has begun to decline there on the basis of evidence about abortion and other family limitation practices. [30] A remarkable beginning has been made in the government family planning program. In large scale national family planning programs in both Taiwan and Korea very large numbers of couples are adopting the new intra-uterine contraceptive devices. Many of those adopting such methods in the organized programs are those formerly using abortion to solve their family limitation problems. So the behavior in the transition period initially was very similar to that experienced formerly in countries now having low fertility.

57. For several of the areas in which the fertility decline has begun already—particularly Taiwan, Hong Kong, and the Republic of Korea—I venture to predict acceleration of the decline within the next five years to levels of perhaps 20–25 births per thousand. These predictions are presented with humility as a basis for discussion. The assumptions on which they are based are presented below not because they are necessarily correct, but because testing such assumptions is an important part of the future research that is needed. The assumptions are that fertility should decline first and most rapidly under the following conditions:

1. where significant social development has already occurred.
2. where mortality has been relatively low for some time.
3. where there is evidence that many people, wanting moderate-sized families are beginning to try to limit family size.
4. where there are effective social networks transcending local communities through which family planning ideas and services and other modernizing influences can be disseminated.
5. where there are large scale, effective *organized* efforts to disseminate family planning ideas and information.
6. where such new contraceptives as the intra-uterine devices or contraceptive pills are effectively available.

58. It is not necessary to assert that all of these are necessary preconditions for *any* fertility decline. I do not know what the necessary mix is for the beginning or for accelerations of fertility decline. That is precisely one of the important general questions on which we need discussion and research. Obviously the first four conditions are relevant both to the past and to current situations. The last two conditions—organized programs and the new contraceptives—introduce new elements for which history provides no specific guide-lines.

59. It is not possible in the limited time available either to elaborate these assumptions or to discuss their possible application to each major area of the world. I believe that the favorable situation with respect to most of these variables is responsible for the fertility declines noted above in a few countries. Whether the particular predictions are right or wrong, it is very likely that fertility changes will be occurring in many countries at various rates and under varying conditions in the next few decades. There should be increasing opportunities to study the social and demographic correlates of fertility change. For this purpose we will need to have international cooperation so that the kinds of research presented at this conference can cover more variables in comparative studies, with a wider range of the essential data, and with some consensus on one or more general conceptual frameworks.

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2. Fertility in developed countries during the twentieth century, Paper A.1/I/E/162.
3. Many of the ideas and in some cases the specific wording used in this section and in the rest of the paper are drawn from the following publications of the author: "The sociology of human fertility," Current Sociology, 10/11, 35–121 (1961–62); "Norms for family size in underdeveloped areas," Proceedings of the Royal Society, B., 159, 220–245 (1963); "The transition from high to low fertility: A challenge to demographers," Population Index, 30 (1965).

4. Kingsley Davis and Judith Blake Davis, "Social structure and fertility: An analytic framework," Economic Development and Cultural Change, 4, 211–235 (1956).
5. Kingsley Davis, "The theory of change and response in modern demographic history," Population Index, 29, 345–366 (1963).
6. E.g., among the papers of this conference see K. Mittenyi, "Social and psychological factors affecting abortion in a legalized abortion system," Paper B.13/V/E334) and a Klinger, "Demographic effects of abortion legislation in some European socialist countries," Paper A.1/E/88.
7. Even on this point our evidence is weak. We have no data for most low fertility countries on the proportion of couples in various demographic and social strata who use various methods of family limitation. For a fairly recent review see D. V. Glass, "Family limitation in Europe: A survey of recent studies" in Clyde Kiser (ed.), Research in Family Planning, Princeton University Press (1962).
8. E. Vielrose, "Age specific fertility rates in Poland," Paper A.1/V/E/131.
9. Current reassessments of the role of private organizations in providing contraceptive information and services during the period of early decline of the birth rate in Western Europe may require some modification of this generalization.
10. M. Muramatsu, "Policy measures and social changes for fertility decline in Japan," Paper A.1/I/E/60; Y. A. Sadvokasova, "Birth control measures and their influence on reproduction," Paper A.1/V/R/189.
11. As Ansley Coale points out there are exceptions to these board generalizations. Fertility fell in Bulgaria, Spain, and some other southern and east European countries while mortality was still rather high. He reports that a major decline in fertility has already occurred in every nation in which the following prevail; no more than 45% of the labor force in extractive industry, at least 90% of the children of primary school age; at least 50% of the population urban. But he also reports that the decline in France occurred before it reached any of these levels and it began in England a considerable time after reaching most of them. See A. Coale, "Factors associated with the development of low fertility: A historic summary," Paper B.2/I/E/194.
12. E. Adil, "The use of statistical guides and measures of effectiveness in determining government policy for influencing fertility—Pakistan," Paper A.1/I/E/416; B. L. Raina, "Possible effects of public policy measures on fertility in India," Paper A.1/I/E/466.
13. "The influence of socio-economic factors on natality," Paper A.1/I/R/254.
14. "Economic development and fertility," Paper A.1/V/E/85.
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16. E.g., H. J. Habakkuk, "Family structure and economic change in nineteenth century Europe," Journal of Economic History, 15, 1–12 (1955).
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18. For example, see O. D. Duncan, "Farm background and differential fertility," Demography, 2, 240–249 (1965).
19. For example, in the data from the 1960 U.S. Census while fertility differentials are not great as between different income groups or occupational groups, fertility tends to be higher (not lower) among groups in which unemployment rates are relatively high. In the Indianapolis fertility survey in the early 1940's, it was found that fertility was highest and family planning least effective among those who expressed feelings of insecurity. See C. V. Kiser and P. K. Whelpton, "Fertility, planning, and feelings of economic security" in Social and Psychological Factors Affecting Fertility, 3, 467–548 (1952).
20. An article in the New York Times for June 30, 1965 cites a study appearing in a recent issue of Voprosy Philosofil on some problems of job placement to the satisfaction of young people in a social survey in the Novosibirisk region of Siberia. I have not had access to the original article, as yet. If the report is correct, it would appear that these results are not dissimilar from those found in other industrialized countries when a considerable increase in the young adult age group is found in a changing economy.

21. "The influence of disproportions in the sexes on the married state of population and natality in the Ukrainian SSR," Paper A.1/V/R/315.
22. "Doctrines and attitudes of the major religions in regard to fertility," Paper A.1/I/E/92.
23. For example, see C. W. Westoff, R. G. Potter, Jr., P. C. Sagi, and E. Mishler, "Family Growth in Metropolitan America," Princeton University Press (1961); F. Van Heek, "Roman-Catholicism and Fertility in the Netherlands: Demographic Aspects of Minority Status," Population Studies, 10, 125–138 (1956).
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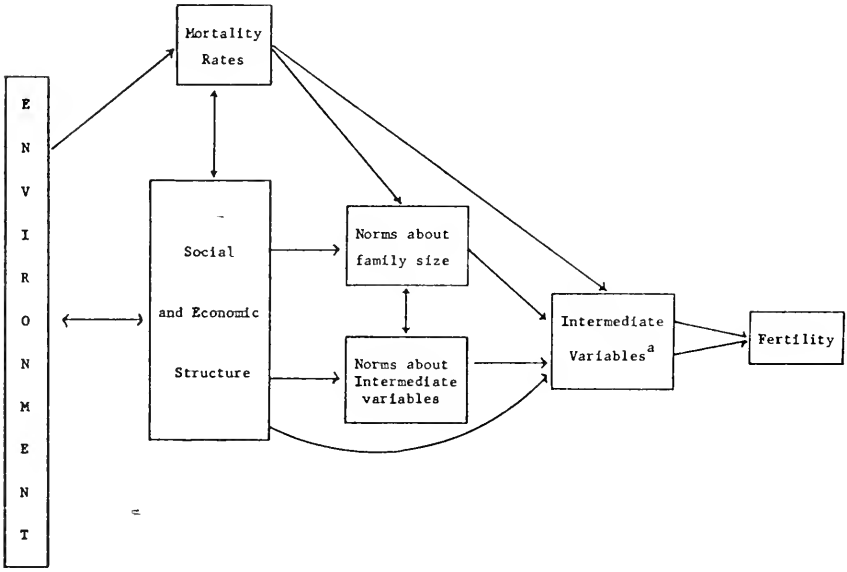

[a]These are listed in detail in the paper.

TABLE 1.—*Estimated crude birth rates and gross reproduction rates for the regions of the world*

[Weighted averages of rates for 1960 or most recent dates of available data for countries within each region]

Region	Crude birth rate	Gross reproduction rate
World total	[1] 35–36	[1] 2.25–2.31
Developing regions	[1] 41–42	[1] 2.6–2.7
Africa	48	3.0
North Africa	46	2.9
West Africa	54	3.4
South and East Africa	45	2.7
Asia (excluding U.S.S.R.)	[1] 40–41	[1] 2.5–2.6
South West Asia	45	3.0
South Central Asia	44	2.9
South East Asia	49	2.9
East Asia	[1] 35–37	[1] 2.1–2.3
Middle and South America	41	2.8
Middle America	45	3.0
South America	40	2.7
More developed regions	22	1.4
Northern America	24	1.8
Europe	19	1.3
Northern and Western Europe	18	1.3
Central Europe	18	1.2
Southern Europe	21	1.3
Oceania	24	1.8
U.S.S.R.	25	1.4

[1] Range of estimated values corresponding to alternative estimates for China (mainland).

TABLE 2.—*Distribution of countries by level of crude birth rate*

[Excluding countries having fewer than 250,000 inhabitants in 1960 and those having no satisfactory data. Countries are classified according to levels of crude birth rates in 1960 or at the most recent dates of available data]

Crude birth rate per 3,000 population	World total	Less developed regions	More developed regions	Africa	Asia (excluding U.S.S.R.)	Middle and South America	Europe (excluding U.S.S.R.)	Northern America	Oceania	U.S.S.R.
Total	123	88	35	37	24	27	29	2	3	1
Under 15	3		3				3			
15.0 to 19.9	18	1	17		1		17			
20.0 to 24.9	14	4	10		2	2	7	1	1	1
25.0 to 29.9	4	1	3		1		1	1	1	
30.0 to 34.9	3	3			1	2				
35.0 to 39.9	11	11		3	4	4				
40.0 to 44.9	22	21	1	9	3	9	1			
45.0 to 49.9	29	28	1	13	7	8			1	
50.0 to 54.9	12	12		5	5	2				
55.0 to 59.9	5	5		5						
60.0 and over	2	2		2						

TABLE 3.—*Distribution of countries by level of gross reproduction rate (GRR)*

[Excluding countries having fewer than 250,000 inhabitants in 1960 and those having no satisfactory data. Countries are classified according to levels of GRR in 1960 or at the most recent dates of available data]

Level of gross reproduction rate	World total	Less developed regions	More developed regions	Africa	Asia (excluding U.S.S.R.)	Middle and South America	Europe (excluding U.S.S.R.)	Northern America	Oceania	U.S.S.R.
Total	122	87	35	37	24	26	29	2	3	1
Under 1.0	1		1				1			
1.0 to 1.2	14	1	13		1		13			
1.3 to 1.5	13	2	11			2	10			1
1.6 to 1.9	10	3	7		3		4	2	1	
2.0 to 2.3	7	6	1	3		3			1	
2.4 to 2.6	12	12		8	4					
2.7 to 2.9	24	24		9	6	9				
3.0 to 3.2	19	19		8	3	8				
3.3 to 3.5	20	18	2	8	7	3	1		1	
3.6 and over	2	2		1		1				

PRESIDENT JOHNSON GIVES ACTIVE, DYNAMIC LEADERSHIP

Senator GRUENING. And then we have the very active and dynamic leadership of President Johnson, as has been brought out, who has now six times since his election spoken vigorously and forthrightly on this subject. And I would say that his declarations really constitute a mandate to the heads of his agencies to carry out these policies.

Now, to what extent the Congress will agree to enact this particular form of legislation remains to be seen. There is no particular sacredness about this form. It is an approach to the question. The subcommittee hopes that either this or some other approach will be adopted in this session of Congress, since action is both desirable and needed.

Dr. Tatum, would you be kind enough now to yield your seat to the next witness? It seems that it is desirable that he occupy that seat because of the radio transmission, and I would like to have you present Dr. Dickinson W. Richards.

Dr. TATUM. Before I leave, Senator, I have tentatively made arrangements for each of us to place in the record other letters in support of this, on the bill, from other Nobel laureates who were unable to attend.

Senator GRUENING. They will be included in the record.

(The material referred to follows:)

EXHIBIT 14

LETTERS FROM NOBEL LAUREATES TO SENATOR GRUENING AND TO DR. TATUM IN SUPPORT OF S. 1676

(Dr. Fritz Lipmann, Dr. John H. Northrop, Dr. William P. Murphy, Dr. Willis E. Lamb, Jr., Dr. Emilio Segrè, Dr. John F. Enders, Dr. Hermann J. Muller, Dr. Frederick C. Robbins, Dr. Edward Doisy, Dr. Konrad Bloch)

THE ROCKEFELLER INSTITUTE,
New York, N.Y., July 16, 1965.

HON. ERNEST GRUENING,
U.S. Senate,
Washington, D.C.

DEAR SENATOR GRUENING: I am writing you at the suggestion of Dr. Tatum. I was very pleased to learn about your efforts to pass a birth control information bill.

As a scientist I feel a responsibility to make people recognize the need to adapt to novel situations that are created by the successes of science. One such is the population explosion. This is undoubtedly caused by the considerable extension of the average life span through much improved infant care, and the successful fight against disease and malnutrition. One hopes these benefits will be shared with many more people in this world.

The scientist is particularly sensitive to the emergence of evil out of the good he tries to bring to the world. He has, therefore, to persuade the world to recognize that change demands the letting down of old prejudices, lifting of taboos, and taking an unbiased look at a new situation. If we have helped more people to grow up and live longer, we have disturbed the biological balance by our well doing and have to restore it by permitting fewer to be born.

I am enclosing herewith a short essay on a similiar topic that may be relevant to the present issue.

I remember with pleasure having met you at a convocation at Brandeis when you were awarded an honorary degree.

Sincerely yours,

FRITZ LIPMANN.

Disproportions Created by the Exponential Growth of Knowledge

(By Fritz Lipmann*)

[Perspectives in Biology and Medicine, Spring, 1962]

I have often asked myself lately: Do we exaggerate the degree of change that we have been living through? Even counting in an undeniable tendency to exaggerate recent ones, I find it inescapably true that changes have increased with unusual rapidity in degree and impact through our success in the natural sciences. These are indeed presenting us with an exponential, upward curve, the "reaction" occurring at a mounting rate. When we plot progress against time, we get a soaring curve, the upper one in our figure. At the same time, on inspecting the situation more closely, we come to realize that this describes only part of the over-all picture of our man-dominated earth. The missing part is the relation of man to man or, in a very wide sense, the social relationships between men, which have not followed through with a parallel radical change. Rather, they have more or less oscillated between various levels all through history, every so often exaggerating in one direction or the other, but then returning to the norm. On the average, however, even accepting a trend toward certain gains which we do not want to define too closely at the present time, we find this change has been, at best, not exponential but rather proportional with time, and slow at that, as indicated in the lower curve of the figure. These two curves, the one running away from the other, I believe dramatically present the problem of our time.

If we look, as biologists, at the relationship between man and his environment, we find that, on the biological scale in the framework of evolution, man as a species has changed very little, if any, during the last maybe 6,000 years, the historical period. There have not been dramatic mutations that have influenced the behavior of the species on a grand scale. In contrast, by interaction between man and his physical environment, profound changes have resulted from the very special position that man as a rational animal has developed in the framework of biological evolution.

Through his ability to formulate and set it down in written language, man has been able to transmit learned information. This has proved to be most important in the development of our understanding of Nature. In the evolution of the natural sciences, their recent exponential growth is largely due to the transmission of experience; it would have been impossible if the skills of previous generations were not transferred to the following ones.

This is one of the factors; let us consider another which I feel is important. As a biochemist, nowadays more commonly called a molecular biologist, I have followed and participated in the development of a large segment of the biological sciences. By successful analysis of the chemical and physical devices that keep organisms alive and, during the last few years, of those that are responsible for reproduction, we have come to realize that something exists inside the cells which I like to call an organismic technology. That is, the problems on the cellular level that confront the living organisms are similar to those with which we are confronted in our man-developed external technology. Our communities are becoming superorganisms that are built and function on principles not unlike those met with in our recent understanding of cellular processes.

This intra-cellular or organismic technology developed at a very slow pace in the course of evolution. The method of mutational change was tried out against the environment through survival of the fittest, a slow process. But, as a thinking animal we learned to build instruments that, to speak very generally, enormously increase the resolving power with which our organs have been operating up to the not too distant past. On the one hand, such prosthetic organs as the microscope, the electron microscope, and X-ray diffraction apparatus now permit our eye to discern refined images that go down to atomic levels. On the other hand, what one might call our resolving power of space has increased through the engineering of vehicles that can transport us with greater and greater rapidity around the earth and into outer space. These are just two examples to illustrate how a biologist might look at man's interaction with his environment.

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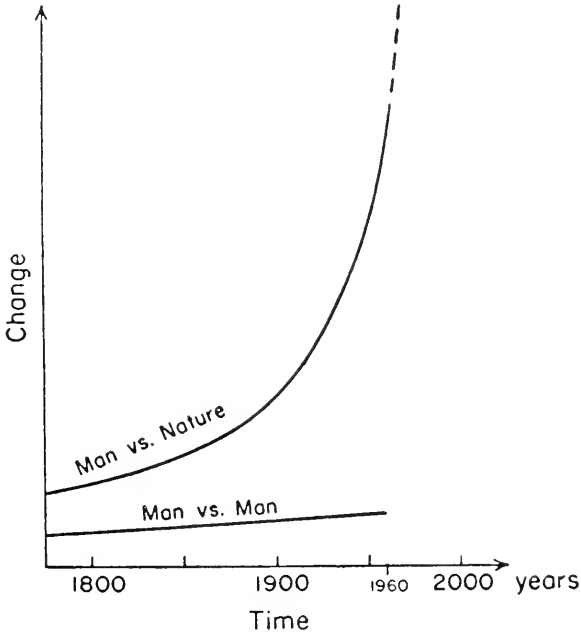
*The Rockefeller Institute, New York 21, N.Y. This article represents a talk given at a symposium, "Changing Concepts of Life and Man," moderated by Dr. Lincoln Reis at Long Island University in December 1961.

Experiment and theory most recently have furnished us with the ability to obtain energy on a level we did not dream of a short time ago. It is this particular progress in technology that has turned into the most urgent problem of our generation. The energies that have become available to man are now approaching the order of extra-terrestrial energy—for example, solar energy. We are more or less only at the beginning and, in all likelihood, will considerably increase present levels. But already these energies can literally move mountains and build seas and are of a scale such that they threaten to become a fatal danger to the species, man.



The reason for this, I think, is given by the two curves, and in a way they reflect the state in which man is caught at present. They also reflect the schizophrenic condition of man as a rational animal overtaking, by leaps and bounds, man as a social animal. The only remedy is for the lower curve to adjust: the social, emotional, and political relationships between man and man need to adapt themselves to the new conditions that have resulted from the much refined resolving power with which man, the thinking animal, has learned to integrate with his natural environment.

This is the diagnosis, but although I can see where the remedy is to be found, the necessary adjustment in a short span of time is a formidable problem, and the question now before us is: can we remedy the situation before irreparable damage has been done?

UNIVERSITY OF CALIFORNIA,
DEPARTMENT OF BACTERIOLOGY,
Berkeley 4, Calif., July 8, 1965.

GOVERNMENT OPERATIONS SUBCOMMITTEE ON FOREIGN AID EXPENDITURES.

GENTLEMEN: I strongly endorse Senator Gruening's "birth control information bill."

Modern medical knowledge has led to the rapid increase in population and modern medical knowledge is competent to control it. If this is not done,

economic aid is useless, since any slight gain in living conditions is rapidly obliterated by increasing population. The President has wisely said: "Five dollars spent on birth control is worth 100 dollars in economic aid." The recent events in Egypt and India are examples of this fact.

One of the objections frequently offered to modern methods of birth control is that they are "unnatural." This is true, but modern medical methods which lead to increasing population are equally "unnatural." The crisis in the population problem results from the fact that people eagerly adopt scientific methods which increases the population, but object to such methods for limiting the population. This is a dangerous policy, and must, if pursued, lead inevitably to famine, war, and pestilence, the "natural" regulators of population, as it already has done in the East and in South America.

A second misconception lies in the failure to realize that it is the unwanted children who are the cause of the overflow population. It is these unwanted children who fill the relief rolls and the "mentally retarded" groups.

The immediate decline in the birth rate in Japan, after legalization of abortion, is prima facie evidence that limiting the number of unwanted children practically solves the problem.

Sincerely.

JOHN H. NORTHROP,
Professor Emeritus of Biophysics and Bacteriology.

BROOKLINE, MASS., *July 12, 1965.*

MR. E. L. TATUM,
The Rockefeller Institute.
New York, N.Y.

DEAR MR. TATUM: I have your letter of July 7th in regard to testifying either in person, or by means of a letter, before the Senate Subcommittee on Foreign Aid Expenditures in regard to Bill S. 1676.

Although I think this is a distinctly important subject, and from what I know of Senator Gruening's bill, I should be in favor of its adoption, it would be impossible for me to attend the session in Washington and perhaps this will do as a statement for the record.

With kindest regards, I am,

Sincerely,

WILLIAM P. MURPHY, M.D.

YALE UNIVERSITY,
New Haven, Conn., July 10, 1965.

DR. E. L. TATUM,
Roekefeller Institute,
New York, N.Y.

DEAR DR. TATUM: I regret that I will be unable to attend the hearing by the Government Operations Subcommittee on Foreign Aid Expenditures on July 14.

I am wholeheartedly in favor of the bill S. 1676 introduced by Senator Ernest Gruening, as outlined in the Science article to which you gave reference.

Yours sincerely,

WILLIS E. LAMB, Jr.,
Ford Professor of Physics.

LAFAYETTE, CALIF., *July 8, 1965.*

DEAR DR. TATUM: Many thanks for your letter of the 8th.

As you know I am sympathetic to the cause of birth control, but I do not feel competent to contribute to the Senate hearings more than an alert layman could.

For this reason I do not think it appropriate for me to participate in the hearings.

With best wishes for success,

Sincerely yours,

EMILIO SEGRÈ.

THE CHILDREN'S HOSPITAL MEDICAL CENTER,
Boston, Mass., July 26, 1965.

Re hearing on Senate bill 1676.

GOVERNMENT OPERATIONS SUBCOMMITTEE ON FOREIGN AID EXPENDITURES,
U.S. Senate.

GENTLEMEN: It has long been apparent to a relatively few that the control of populations next to the control of atomic warfare is, or promises soon to be, the most urgent of world needs. However, only recently has there come about a somewhat wider awareness of the threat to man's future well-being implicit in the sharply increasing growth of many nations. Among these nations our own must be included, although here the effects of population pressures within the next generation or two will presumably be less destructive than in certain other areas.

I shall not attempt to recapitulate in any particular the factual data that demonstrates the reality and gravity of this threat. Their significance has been made plain in a number of recent documents, such as the 1963 Report of the Committee on Science and Public Policy of the National Academy of Science, the 1965 report of the Committee on Population of the same body, and a 1964 publication of the World Academy of Arts and Sciences entitled: "The Population Crisis and the Use of World Resources."

Rather it is my sole purpose to emphasize before this Committee my conviction that direct attempts to control population must be based upon a clear understanding of the urgency of the situation by most of the people in a nation.

Although valuable attempts to achieve such broad dissemination of knowledge respecting the problems of expanding population have been made in this country and elsewhere by private organizations, it is unlikely that alone they will prove sufficient. In addition, therefore, vigorous and unremitting activity to this end by those in positions of leadership in Government is indispensible.

It is for this reason that I am grateful that Senator Gruening and his Committee have decided to hold these hearings in which I am most happy to be allowed to participate even in this indirect manner.

JOHN F. ENDERS, Ph. D.,
University Professor, Harvard University; Chief, Research Division of Infectious Diseases.

THE INSTITUTE FOR ADVANCED LEARNING
IN THE MEDICAL SCIENCES, CITY OF HOPE,
Duarte, Calif., July 8, 1965.

HON. ERNEST GRUENING,
Chairman, Government Operations Subcommittee on Foreign Aid Expenditures, U.S. Senate, Washington, D.C.

DEAR SENATOR GRUENING: Below is my testimony concerning the subject of your bill S. 1676. I am sending this in connection with a message from Dr. Edward L. Tatum to American winners of a Nobel Award in science, informing them of the opportunity to present such testimony at the meeting of your subcommittee on July 14.

There could never be a great society, meaningful civil rights, or a successful war against poverty if that society allowed its children to be born to the degradation—physical, moral and mental—that unplanned parenthood would be sure to bring. And even if the members of that society did provide for their children with the utmost wisdom and compassion, by the needed spacing of births and the concomitant development of material and spiritual resources, nevertheless this would all be nullified if, elsewhere on this shrinking planet, populations continued to outrun their means, so as to exert irrestible pressures on others. Democracy, education, personal freedoms, would become vain slogans, of a kind and on a scale incomparably more devastating than any previously experienced.

There is no escape from these conclusions, which are no magic prophecies. It is however possible to avoid this impending dissolution if in this generation we take the steps that would make available for our own and other peoples the information, the techniques, and the material means by which births can be adequately planned, and if we alert them to this universal danger. To do so is our profound responsibility toward our own children and toward humanity every-

where. It is a moral imperative of today's world, against a menace even more stealthy, more sinister, and more subversive of all our values, than the awful one of nuclear bombs. If we of today lack the integrity and the courage to deal with this menace, the chance to do so will soon be lost to everyone.

It would be possible for me to relate this crisis to what my fellow biologists have learned about population growth and evolution, about the workings of the reproductive system and how they can be controlled, about the corrosive consequences of medical advances, if used in an unbalanced way, on future population quality, but the present issue is too urgent for such scholarly discourses now, however important they may eventually be. I could also expatiate on the promises of my own specialty, genetics, for the future of mankind, and of how they, like the potential benefits of science in general, would be submerged beneath the appalling flood of ever vaster and more miserable populations. But it would be a misleading digression to introduce a discussion of these great triumphs and inspiring hopes of man when considering how to deal with this menace to all that is human in him. At the same time, I have enough confidence in democratic methods, in you and your committee, and in basic human nature everywhere, to believe that you, your committee, and the Congress will help us all to save ourselves.

Yours respectively,

HERMANN J. MULLER.

CLEVELAND METROPOLITAN GENERAL HOSPITAL,
July 29, 1965.

Senator ERNEST GRUENING,
Subcommittee on Foreign Aid Expenditures, Committee on Government Operations, U.S. Senate, Washington, D.C.

DEAR SENATOR GRUENING: This is in response to your inquiry, which was relayed through Dr. Tatum, for a statement concerning the significance of population control and the consequences of continued population explosion. It probably will not be possible for me to appear before your Committee, but I feel strongly enough about this matter that I am happy to submit the following statement.

The numerical implications of the problem are frightening indeed when one realizes that the increase is a geometric progression and not a simple arithmetic one. On a worldwide scale this raises innumerable problems relative to the available food supply, housing, and others. Although many of these difficulties perhaps can be dealt with in the future by technical advances, it would seem that our ability to save lives has advanced more rapidly than our ability to provide for the people so saved. This is particularly evident in some of the developing countries where, due to the introduction of modern public health practices and other factors not so well understood, the population increases have nullified to a large extent efforts to improve the economic and social situation in these countries. Such experiences clearly demonstrate the importance of attacking the problem in underdeveloped countries as a whole rather than doing a few things which can easily be done, such as introducing vaccination or specific large scale health measures, without consideration for the impact this may have in the absence of other programs to provde for the increased population. Needless to say, population control measures are becoming recognized to be of paramount importance.

Now turning to an entirely different aspect of the problem, it is evident that in our culture the role of the child in society is going through remarkable changes which is not apparent to many people. With the great reduction in newborn mortality and in fatal diseases of infancy and childhood, the prospect that a child will survive into adult life is vastly increased over what it was not too many years ago. It is no longer necessary to have ten children in order for three or four to survive into adult life or into their reproductive period. Furthermore, the need for large families has decreased, at least, in societies such as those represented by the United States and Western Europe. It is no longer critical to the economy of the family to have large numbers of children, particularly male children, in order to have sufficient hands to do the necessary work. More and more the emphasis is upon intellectual competence rather than simple physical ability. Our need is not so much for numbers as it is for capability, particularly of an intellectual nature. All these factors alter the situation most dramatically and again highlight the need to consider limiting

the numbers and concentrating upon the opportunities for education and normal psychological and emotional development of those children who are born.

In my position as a teacher of pediatrics I see often children who present major pathology, not of an organic nature, but of a sociologic or psychologic nature, either because they are born into families unable economically, sociologically or intellectually to provide for their needs, or who are born into families where they are really not wanted. It has always seemed to me that this is a major tragedy when it occurs and such situations lead to an increase in psychopathology and in the numbers of persons who cannot contribute in a fruitful way to the welfare of the community. Thus, the proper planning of pregnancies is of great importance to the child as well as to society. Something that has always struck me most forcefully is the great avidity with which women seek out information on contraception once they become aware of its availability. Indeed their desire is such that apparently it overcomes many religious or cultural restrictions.

Finally, a comment which expresses a personal prejudice. It is my strong feeling that as the population increases the opportunities for the kind of society and the way of life that I, at least, enjoy the most, namely, a certain degree of privacy and the ability to spend time in areas untouched by civilization, will rapidly disappear. One could argue whether this is good or bad, but certainly it will be different. From what I have observed of some of the older, more mature societies where the population has outstripped their resources, I do not look forward to my descendants living under such conditions.

I would like to express once again my personal support for anything that can be done to make available population control information and I repeat that I feel this is one of the most important of all the problems to be solved if man is to be able to enjoy the benefits of his great intellectual, spiritual, and inventive capacities.

Thank you for your attention.

Sincerely yours,

FREDERICK C. ROBBINS, M.D.,
Professor of Pediatrics and Director of the Department.

THE SUBCOMMITTEE ON FOREIGN AID EXPENDITURES,
U.S. Senate.

GENTLEMEN: As one of the Nobel laureates who signed the letter to Pope Paul regarding population control, I wish to reiterate my support of this document. The consequences of increasing population, i.e., the increase in the large number of people who now are inadequately fed and the increase in the large number of babies born every year who have only a remote chance for adequate care, nutrition and proper development, must be faced and further steps taken to ameliorate this situation.

ED DOISY.

HARVARD UNIVERSITY,
DEPARTMENT OF CHEMISTRY,
Cambridge, Mass., July 26, 1965.

Hon. ERNEST GRUENING,
U.S. Senate, Washington, D.C.

DEAR SENATOR GRUENING: At the suggestion of Dr. E. L. Tatum, I am writing to you in order to express my strong support for the objectives of the Birth Control Information Bill, S. 1676, which you are sponsoring. As I understand it, this bill calls for the creation of a Federal Office for Population Problems to be charged with co-ordinating various governmental activities in this field. I am in favor of this bill, not only because it reflects a profound awareness of the population problem but because it recognizes explicitly the responsibilities of the Federal Government in these matters.

While the urgency of the population problem and the need for family planning are no longer matters of debate, it is, in my opinion, not sufficiently recognized that the magnitude of the problem requires governmental action and without delay. The contemporary problems, particularly in our increasingly urban society result very largely from overcrowding and the overtaxing of public facilities. In the race to relieve congestion, we are losing ground, yet instead of limiting population growth we continue to foster it if perhaps not overtly. Neither the individual nor private organizations can fully assess the ultimate

consequences of our failure to stabilize the population and to bring it into balance with our living space and our natural resources. It, therefore, becomes the responsibility of the Federal Government to impress upon the public the truth that the overly large family is no longer in the public interest.

In modern societies, government provides free schooling and the free use of public facilities for all. As the guardian of the public interest, government has the duty to see to it that our national assets, cultural as well as physical, remain adequate and that the quality of our living standard and our civilization is not only preserved but continually improved. This cannot be achieved if our population continues to grow unchecked.

I sincerely hope and believe that the agency you propose to establish will be instrumental in accomplishing these aims.

Respectfully yours,

KONRAD BLOCH,
Professor of Biochemistry.

Senator GRUENING. I will direct that a biographic statement of Dr. Richards be placed in the hearing record at this time and accompanying it, the letter which Dr. Richards wrote to me last year at the suggestion of Dr. Tatum, which most clearly and succinctly expressed the great need which he sees for "greatly increased research activity . . . directed toward problems of control of population."

BIOGRAPHIC STATEMENT: DICKINSON W. RICHARDS

Senator GRUENING. Dr. Dickinson W. Richards was born on October 30, 1895, in Orange, N.J. He received an A.B. degree from Yale in 1917, and A.M. from Columbia University in 1922, and an M.D. from Columbia in 1923. Yale awarded him a Doctor of Science degree in 1957.

During the late 1920's Dr. Richards spent a year as a research fellow at the National Institute for Medical Research in London, and since 1928 he has been doing research on the problems of pulmonary and cardiac physiology at the College of Physicians and Surgeons at Columbia University. From 1947 to 1961 he held the position of Lambert Professor of Medicine; since 1961 he has been professor emeritus.

In 1956 Dr. Richards, with others, was the recipient of the Nobel Prize for medicine and physiology. The newspaper articles which have been included in the hearing record tell of his achievements which led to international recognition.

He is a member of the Association of American Physicians, of which he was president in 1962, the Presbyterian Club, and the Century Association of New York City.

Dr. Richards is married and has four children.

EXHIBIT 15

LETTER FROM DR. DICKINSON W. RICHARDS TO SENATOR ERNEST GRUENING, JULY 10, 1965

COLLEGE OF PHYSICIANS & SURGEONS OF COLUMBIA UNIVERSITY,
DEPARTMENT OF MEDICINE,
New York, N.Y., July 10, 1965.

Hon. ERNEST GRUENING,
U.S. Senate, Washington, D.C.

DEAR SENATOR GRUENING: At the suggestion of my friend Dr. Edward L. Tatum, I am pleased to send you my views on the subject of birth control. May I quote from my Billings Lecture, delivered at the annual meeting of the American Medical Association on June 19, 1963, in which I gave my opinion of the most important needs in medical education today:

"I would urge greatly increased research activity in the departments of obstetrics and gynecology specifically directed toward problems of control of population. You are familiar with the figures, the startling and precipitate rise in the curve of the world's total population. We are all too slow in this country to grasp its terrible significance. A program of the broadest scope is needed in this field to study population control in all its phases—reproductive, contraceptive, familial, psychological, social, racial, geographical, religious, and probably other departments as well. It will require great knowledge and vision even to plan such a program."

Sincerely yours,

DICKINSON W. RICHARDS, M.D.,
Lambert Professor of Medicine, Emeritus.

Senator GRUENING. Dr. Richards, we are very happy to have you here to testify in whatever way you see fit.

STATEMENT OF DR. DICKINSON W. RICHARDS, PHYSICIAN, 1956 NOBEL PRIZE WINNER IN MEDICINE AND PHYSIOLOGY

Dr. RICHARDS. Thank you very much, Senator Gruening. I appreciate greatly the opportunity to testify at this session. As Dr. Tatum indicated at the beginning, though greatly concerned, I am in no sense an expert in this field. My statement is a simple one.

"TOO MANY PEOPLE . . . TOO LITTLE FOR THEM . . ."

This large problem created by the so-called population explosion in the world in recent years is well known and accepted by everyone: too many people, and too little for them in food, shelter, and the other necessities of life. Medical advances in the control of disease enhance the difficulties, giving more people a longer lifespan, but aggravating want, malnutrition, and starvation. The latest figure, I believe, is that while the world's food supply increases by 1 percent annually, the world population increases twice as fast. It would be a vast benefit to the world if the numbers of children born could be appropriately reduced.

Our country is fortunate in having an abundant overall food supply, though it is not equitably distributed, and there are similar deficits in other necessities, not only in our poverty stricken areas, but scattered about in our affluent society as well. The immediate problems in this country are more, therefore, those of education, and of actual practical aid, to prevent the birth of more children than can be adequately taken care of.

BASIC ARGUMENT FOR S. 1676: ONLY 10 PERCENT OF AMERICAN FAMILIES WHO NEED FAMILY PLANNING NOW RECEIVE IT

I might quote a recent survey by the Planned Parenthood Federation that only 1 out of 10 of the 34 million American couples in need of family planning now receives it.

This, in its simplest form, it seems to me, is the basic argument for provisions in our laws such as are set forth in the bill S. 1676.

As a single evidence of interest in this field in our medical scientific community, I might perhaps note that Columbia University has just been awarded a grant of several million dollars from the Ford Foundation to establish an International Institute for the Study of Human

Reproduction, under the direction of Dr. Howard C. Taylor, professor emeritus of obstetrics and gynecology and an outstanding authority in this field. Plans for the building of this institute are already underway. This demonstrates the importance which a great foundation and a great university now assign to this pressing social problem.

Thank you.

PROFESSOR JOHN ENDERS OF BOSTON'S CHILDREN'S HOSPITAL SUPPORTS S. 1676

Senator, I have a few other letters and particularly one from Prof. John Enders of Harvard which I should be glad to read, if you wish, or to put in the record.

Senator GRUENING. I believe it would be useful to have these letters read.

Dr. RICHARDS. Thank you. This is from John F. Enders, Ph. D., university professor, Harvard University, chief of the Research Division of Infectious Diseases at the Children's Hospital in Boston.

Senator GRUENING. You might mention what Dr. Enders' substantial contributions to science have been.

Dr. RICHARDS. Dr. Enders received the Nobel award in the year 1954, for his discovery in connection with the growth of viruses in kidney tissue, which led to the production of vaccines for the control of poliomyelitis. Since that time his further discoveries have led to the control of measles.

The letter is addressed to the U.S. Senate—I am reading from Dr. Enders' letter—

Gentlemen: It has long been apparent to a relatively few that the control of populations next to the control of atomic warfare is, or promises soon to be, the most urgent of world needs. However, only recently has there come about a somewhat wider awareness of the threat to man's future well-being implicit in the sharply increasing growth of many nations. Among these nations our own must be included, although here the effects of population pressures within the next generation or two will presumably be less destructive than in certain other areas.

I shall not attempt to recapitulate in any particular the factual data that demonstrates the reality and gravity of this threat. Their significance has been made plain in a number of recent documents, such as the 1963 Report of the Committee on Science and Public Policy of the National Academy of Sciences, the 1965 Report of the Committee on Population of the same body, and a 1964 publication of the World Academy of Arts and Sciences entitled: "The Population Crisis and the Use of World Resources."

GOVERNMENT LEADERSHIP INDISPENSABLE

Rather it is my sole purpose to emphasize before this committee my conviction that direct attempts to control population must be based upon a clear understanding of the urgency of the situation by most of the people in a nation.

Although valuable attempts to achieve such broad dissemination of knowledge respecting the problems of expanding population have been made in this country and elsewhere by private organizations, it is unlikely that alone they will prove sufficient. In addition, therefore, vigorous and unremitting activity to this end by those in positions of leadership in Government is indispensible.

It is for this reason that I am grateful that Senator Gruening and his committee have decided to hold these hearings in which I am most happy to be allowed to participate even in this indirect manner.

JOHN F. ENDERS.

Senator GRUENING. Thank you.

BASIS OF POPULATION EXPLOSION: DECLINE IN DEATH RATE

Dr. Richards, isn't it rather significant in certain ironical aspects that Dr. Enders, as with other physicians and scientists, has contributed very materially to the diminution of the death rate. They have been important discoverers in the limitation of measles which at one time took a large toll among infants, and poliomyelitis, which you are familiar with, which is now pretty much on its way out, and that as a result of their discoveries and their scientific research, we have really aggravated the very problem that we are now confronting, and that is, of course, the basis of this present population explosion.

In the last half century, more or less, the great gains in medicine, in surgery, in therapeutics, in better knowledge of diets, and so forth, have altered profoundly the relation between the birth rate and the death rate; that is why we now have this problem confronting us and confronting the whole world, a problem which did not exist, at least in this recognizable degree, half a century ago. I believe that Dr. Enders is typical of the scientists who have helped limit disease and who through their scientific discoveries have really helped bring about this other problem which we must now face squarely.

WE HAVE HEALTHIER PEOPLE . . . AND MORE OF THEM

Dr. Richards. I have thought about this paradox many times, and I am sure everyone has. I think, to put it in its simplest terms, there are two aspects to it. The first, of course, is the immense betterment of the health of our society which has been achieved by such men as John Enders, and when one thinks of the ravages of poliomyelitis, which even more crippled than killed, one can never cease to be grateful to him.

In other words, we have a more healthy society, more healthy people than we did before, but the other side is that we have more people, and the control of that is the problem before us.

Senator Gruening. Certainly no one would quarrel with or deprecate the improvement in health and the diminution in suffering that has resulted from these medical discoveries, but we do face this new development, which is really a matter of our times. It is a problem that—well, it was recognized by Malthus, perhaps somewhat prematurely but with great vision, a century ago; it is now facing us with its full impact. We have gotten to a point now where we are realizing that we should have acted long ago if we had had the vision and understanding and circumstances which would have made action possible.

Even as we discuss this problem, our birth rate is increasing at a prodigious rate and threatening to overwhelm us in the near future, as other witnesses have testified.

We are very grateful to you, Dr. Richards. I wonder whether now we could hear from Dr. Szent-Gyorgyi.

BIOGRAPHIC STATEMENT: ALBERT SZENT-GYORGYI

Dr. Albert Szent-Gyorgyi was born in Budapest, Hungary, on September 16, 1893. He received an M.D. from the University of Buda-

pest in 1917, and a Ph. D. from Cambridge University of England in 1927. From 1931 to 1945 he was a professor of medical chemistry at the University of Szeged; following this, he was professor of biochemistry at the University of Budapest for 3 years.

At the present time he is director of research at the Institute of Muscle Research, Marine Biological Laboratories in Woods Hole, Mass. Dr. Szent-Gyorgyi was awarded the Nobel Prize in medicine in 1937. The readers of the hearing record can refer to the newspaper clipping for details which describe this award. In 1954 the Heart Association presented the Lasker Award to Dr. Szent-Gyorgyi.

He is president of the Academy of Sciences of Budapest, vice president of the National Academy of Budapest, and a member of the National Academy of Sciences Council of Education. He has written several books and articles.

Dr. Szent-Gyorgyi is married and has one daughter.

Dr. Szent-Gyorgyi, we are very happy to have you here, and we will be glad to hear from you.

STATEMENT OF DR. ALBERT SZENT-GYORGYI, PHYSICIAN, 1937 NOBEL PRIZE WINNER IN MEDICINE

Dr. Szent-Gyorgyi. Senator Gruening, science has interfered with the order of nature by introducing death control. Women can now give birth to children, bring them up without fear of death, and our own cities are depopulated no more by mysterious epidemics. This means a dangerous disturbance of an age-old balance. If the present population growth continues undisturbed, then, according to Sir Howard Florey, president of the Royal Society and one of the developers of penicillin, there will be 1 square yard available on the earth's surface for every human being in 600 years. If the acceleration of increase goes on, this stage will be reached much sooner, and men will have to kill and eat one another.

This situation could be corrected by interfering once more with Nature's order in a way which would compensate for our earlier interference. Now that we have introduced death control, we have to introduce birth control, too.

"PROBLEMS OF BIRTH CONTROL . . . ASK FOR URGENT STATE ACTION . . ."

The problems of birth control are complex, demand study from a social, scientific, and technical point of view. They demand action on a scale which far exceeds the ability of the individual, and ask for urgent state action. I have, here, letters from several Nobel Prize winners, who all arrive at a similar conclusion and also point out the narrow relation of birth control to our social problems, poverty, ignorance, crime, and delinquency. If human life is sacred and it is a sin to kill—extinguish a life—then it is even greater sin to call to existence a human life without the ability or the desire to provide for it, leaving procreation to blind instincts, a burden on the rest of society. According to our Constitution, a woman has the right to do with her body what she wants, and in our democratic society she has the right to learn everything about her body and its working that she wants to know.

"A GREAT SOCIETY CANNOT EXIST IN A MISERABLE WORLD"

A great society cannot exist in a miserable world. As a privileged country we have the duty to come to the help of the less privileged ones. This is not only our moral obligation but our simplest self-interest. An increase in food production could have a favorable effect on social conditions only if it does not go parallel with an increase in the number of mouths which have to be fed.

There is ample evidence that birth control is possible without harmful effects to health and so the only obstacle in its way is ignorance, superstition, and religious bigotry.

Senator Gruening, I have here a few letters from which I would like to read a few statements to the point.

Senator GRUENING. I wish you would.

LETTER FROM NOBEL LAUREATE DR. EDWARD DOISY

Dr. SZENT-GYORGYI. The first is by Edward Doisy who was the biochemist who made the first really fundamental great contribution to the chemistry of sex and its regulation. And he was one of the greatest authorities, which he still is.

He writes:

The consequences of increasing population, that is, the increase in the large number of people who now are inadequately fed and the increase in the large number of babies born every year who have only a remote chance for adequate care, nutrition and proper development, must be faced and further steps taken to ameliorate this situation.

NOBEL LAUREATE KONRAD BLOCH: "PROBLEM REQUIRES GOVERNMENT ACTION"

I have here another letter by Dr. Konrad Bloch, from Harvard University, who was the last American Nobel Prize winner in chemistry who contributed very much to the knowledge of metabolic chemistry. He writes:

As I understand it, this bill—

Which you propose, Senator—

calls for the creation of a Federal Office for Population Problems to be charged with co-ordinating various governmental activities in this field. I am in favor of this bill, not only because it reflects a profound awareness of the population problem but because it recognizes explicitly the responsibilities of the Federal Government in these matters.

While the urgency of the population problem and the need for family planning are no longer matters of debate, it is, in my opinion, not sufficiently recognized that the magnitude of the problem requires governmental action and without delay. The contemporary problems, particularly in our increasingly urban society, result very largely from overcrowding and the overtaxing of public facilities. In the race to relieve congestion, we are losing ground, yet instead of limiting population growth we continue to foster it if perhaps not overtly. Neither the individual nor private organizations can fully assess the ultimate consequences of our failure to stabilize the population and to bring it into balance with our living space and our natural resources. It, therefore, becomes the responsibility of the Federal Government to impress upon the public the truth that the overly large family is no longer in the public interest.

In modest societies, government provides free schooling and the free use of public facilities for all. As the guardian of the public interest, the government has the duty to see to it that our national assets, cultural as well as physical,

remain adequate and that the quality of our living standard and our civilization is not only preserved but continually improved. This cannot be achieved if our population continues to grow unchecked.

DR. FRITZ LIPMANN: THE RESPONSIBILITY OF THE SCIENTIST

The third letter is by Fritz Lipmann who is one of the greatest authorities in biochemistry, who is responsible for advances in medicine and feels the moral burden on himself. He writes:

As a scientist I feel a responsibility to make people recognize the need to adapt to novel situations that are created by the successes of science. One such is the population explosion. This is undoubtedly caused by the considerable extension of the average life span through much improved infant care, and the successful fight against disease and malnutrition. One hopes these benefits will be shared with many more people in this world.

The scientist is particularly sensitive to the emergence of evil out of the good he tries to bring to the world. He has, therefore, to persuade the world to recognize that change demands the letting down of old prejudicies, lifting of taboos, and taking an unbiased look at a new situation. If we have helped more people to grow up and live longer, we have disturbed the biological balance by our well-doing and have to restore it by permitting fewer to be born.

Senator GRUENING. Thank you very much.

If you would be kind enough to let the stenotypist have those letters, they can be accurately introduced in the record. And then they will be returned to you.

Dr. SZENT-GYORGYI. I will be glad to submit them, Senator.

Senator GRUENING. Thank you very much, Dr. Szent-Gyorgyi.

And I will put into the record of this hearing your response to Dr. Tatum's request to communicate with the subcommittee; in this communication you say what you have said so well here today in other words, that "It is the duty of the nations which regard themselves as most advanced to lead the way."

TESTIMONY DEPOSITED BY ALBERT SZENT-GYORGYI, M.D., PH. D., NOBLE LAUREATE IN MEDICINE 1937, RELATING TO POPULATION CONTROL, JULY THE 7TH, 1965

Our civilization is endangered with extermination from two apparently opposite quarters. On the one side atomic energy, used for military purposes, threatens to wipe out mankind, while overpopulation threatens with the misery and the low levels of civilization which go with overpopulation. The two dangers are not independent, for overpopulation also leads to war.

As a scientist, working on theoretical lines, I am unable to suggest practical steps to be taken, and can declare myself only about the basic problem and its morals. In my opinion, it is a crime, equal to murder, to bring into this world individuals without giving them a change to live a decent life. Overpopulation, caused by un-planned parenthood, must lead to a deterioration of all cultural, ethical, economic and moral values. By establishing "death control", we have already interfered with "natures ways", and it is our urgent duty to compensate for the consequences by pursuing with all our ability birth control and planned parenthood. It is the duty of the nations, which regard themselves as most advanced, to lead the way. This is a moral duty, opposed only by bigotry, superstition, hypocrisy, and ignorance.

BIOGRAPHIC STATEMENT: POLYKARP KUSCH

We would now like to hear from Dr. Polykarp Kusch. Dr. Kusch was born in Blankenburg, Germany in 1911. He received a B.S. from Case Institute of Technology in 1931, and a doctor of science degree from that institute in 1956. In 1933 the University of Illinois awarded

him an M.S., and in 1936 a Ph. D. He also received the doctor of science degrees from Ohio State in 1959, the University of Illinois in 1961, and Colby College in 1961.

Dr. Kusch has taught at the University of Illinois, the University of Minnesota and, since 1949, he has been a professor at Columbia University. He was chairman of the department of physics at Columbia from 1949 to 1952, and from 1960 to the present time. In addition to teaching, he has been a member of the technical staff of the Bell Telephone Laboratories and an engineer with Westinghouse.

In 1955 Dr. Kusch received the Nobel Prize in physics. Our readers can refer for further details to the newspaper clippings which have been entered as an exhibit to today's hearing.

Dr. Kusch is a fellow of the American Physical Society and a member of the National Academy of Sciences, among others.

Dr. Kusch is married and has three children.

Dr. Kusch, we are very happy to have you here.

STATEMENT OF DR. POLYKARP KUSCH, PHYSICIST, 1955 NOBEL PRIZE WINNER IN PHYSICS

Dr. KUSCH. Senator Gruening, I am by profession a physicist and a university professor. Neither of these activities gives me a professional competence to speak precisely of the present extrapolated rate of population growth; of the probable social and economic consequences of uncontrolled population growth; to say nothing of the probable burden of human unhappiness and misery that follows in the wake of uncontrolled population growth; and finally, of the technical and social means of controlling the world population. Qualified experts have testified to this committee on these matters.

"A CLEAR AND PRESENT DANGER"

Still, I am grateful of the invitation to express my own views on what I believe to be the greatest single problem that faces man at this point in the 20th century. I present my views both as a scientist and I hope as a man of good will.

There has been a widespread complacency which persists to a dangerous degree and is expressed in the slogan, "Science will find a way" to feed and otherwise provide for an exponentially increasing population. It is indeed true that science and a derivative technology have found ingenious solutions to a vast number of mankind's problems. Still, science, even in this age of nuclear fusion and fission, the age of the exploration of outer space, does have its limitations. I doubt that any scientist, any physicist, would express the sober belief that a finite planet can, even by the exercise of the greatest scientific, technical and social ingenuity, forever continue to provide for the needs of an exponentially increasing population, that is, for a population characterized by a doubling time.

The facts of world population increase constitute "a clear and present danger," a time-honored test of need for action. On the simple grounds of the sheer impossibility of feeding an indefinitely large population, I add my urging to that of many others and especially of

my colleagues here that the time for controlling population growth is now; to postpone action is to make necessary nearly unthinkable action later on—such as feeding on each other—or worse yet for mankind, helpless submission to fate, a manmade fate.

WE FACE UNBEARABLE STRAIN ON NATURAL RESOURCES

Modern man enjoys or aspires to a very high standard of living. This has made enormous demands on the resources of the planet, whether irreplaceable ones such as mineral ores and fossil fuels, or replaceable ones such as water or the food of the oceans. In this century we have used vast quantities of materials that were little more than laboratory curiosities before the turn of the century. While a good case can be made for the assertion that these materials, the wealth of the earth, have not always been used wisely, their use has quite certainly enhanced the quality of human life.

For example, the development of electric lighting and of the whole gamut of electronic devices that marks this age would have proceeded quite differently without tungsten, and quite possibly much less effectively. In any case, we do depend on both replaceable material resources for our style of life. It is far from certain that an imaginative science can without exception find effective substitutes for irreplaceable resources. It is also not at all clear that science can uniformly find ways to replenish replaceable resources or to maintain them at desirable levels. In any case, whether through ignorance or social mismanagement, this has not been done. I need only remind you of the falling water table in large areas of this continent and of the gross reduction of available food fish in the Great Lakes. The point is that the high standard of living that some, but not all Americans enjoy, and to which most of mankind aspires, does make large demands on resources. It is already a considerable strain on ingenuity, inventiveness, and imagination to use available resources for the meeting of the aspirations of the present world population. It seems to me that the present rate of world population expansion, together with an improvement in the conditions of life of all men, would put an unbearable strain on our resources, worldwide and to the degree to which we are or are compelled to be concerned with the standard of living elsewhere on the globe, national resources.

I suppose that all men must have some concern for the future of man and his civilization.

Let me even describe it as a private religious feeling.

THE PRESENT IS POINTLESS WITHOUT CREATIVITY

It is my private hope that man, and especially his civilization, will survive. I would believe the present to be essentially pointless if I did not believe that man will continue to think, to explore, to create things of beauty, to produce those artifacts that give comfort and ease and grace of life. It is my unqualified belief that the prospects of man to live a life of meaning in a future that is in any case hazardous and difficult, will be much poorer if we must try to deal with ever-increasing world populations.

". . . IT IS NO LONGER POSSIBLE FOR US TO EXIST IN AN ISOLATED WORLD"

We, as a nation, are already committed to sharing with less favored nations our wealth, resources, and the products of a productive land and an effective technology. More importantly, we are committed to sharing the knowledge and skills which have been cultivated in a new, rich, and vigorous country. The commitment arises, I think, in part, from a rather striking humanitarian streak in us, no matter how crassly economically motivated we may sometimes appear to be. But our commitment also arises from an enlightened self-interest, since at this point in history, it is no longer possible for us to exist in an isolated world. Our present commitments cannot bear fruit by way of a universally decent standard of living and a world in which an enduring peace can exist, if populations grow at a disastrous rate in less favored nations. I do not think that we have any rational option but to assist those nations in the very great problems of population control.

It is clear that we cannot ourselves give the most useful kind of assistance without ourselves becoming informed about all techniques of population control and perhaps developing new techniques. After all, the usefulness of a specified technique is strongly dependent upon the conditions of the society in which it is to be used, and methods should be developed to meet the needs of a range of societies in terms of their economy, tradition, religion, and social pattern.

UNITED STATES URGED TO STUDY ALL ASPECTS OF POPULATION CRISIS

It is precisely those nations in most urgent need of a program of population control that are least equipped to undertake the research necessary to produce an effective program. I strongly urge that we in the United States undertake an increased program of research in population control to study all aspects of the problem. These include the basic biological and biochemical aspects of reproduction and the development and evaluation of methods of reproduction control. They also include essentially sociological studies of the response of societies to reproduction and parenthood. They also include the development of educational programs to make population control not only an acceptable act, but a positively desirable one.

DR. KUSCH SUPPORTS S. 1676

Senator Gruening, I would like to end by stating my wholehearted support of bill S. 1676 and expressing my strong hope that it will become law.

May I, sir, make a few comments about letters?

Senator GRUENING. Yes.

LETTER FROM NOBEL WINNER DR. WILLIS LAMB, JR.

Dr. KUSCH. In spite of the arrogance which is sometimes associated in the public mind with a physicist, we are not given to making public statements about matters in which we are not expert, no matter what the public view of us is. Nevertheless, I have two very brief letters. The first is from my friend, Willis E. Lamb, Jr., professor of physics at

Yale University, with whom I had the pleasure of sharing the Nobel Prize in 1955. He regrets that he is unable to attend this meeting but does make the explicit statement, "I am wholeheartedly in favor of the bill S. 1676 introduced by Senator Ernest Gruening, as outlined in the Science article"—where your bill was described.

LETTER FROM NOBEL WINNER EMILIO SEGRÈ

I have also a letter from Emilio Segrè, professor of physics at the University of California at Berkeley, who received a Nobel Prize for the discovery of the antiproton.

As you know I am sympathetic to the cause of birth control, but I do not feel that competent to contribute to the Senate hearings more than an alert layman could.

For this reason I do not think it appropriate for me to participate in the hearings.

With best wishes.

EMILIO SEGRÈ.

Thank you.

Senator GRUENING. Thank you very much, Dr. Kusch. I applaud your statement, that you view this as the most pressing problem which faces man in this period of the 20th century.

Dr. KUSCH. Yes, sir. May I make a comment, perhaps even extended comments? I am by nature a verbose man.

As a physicist and perhaps, in my advancing years, an amateur sociologist, I am much concerned, as I am sure my colleagues are, with the consequences of science.

As a physicist I have obviously been very much concerned with the problem of nuclear weaponry. I have been very much concerned with the fact the nuclear weapons are presumably as certainly a part of the equipment of man into the indefinite future as the wheel was at an earlier time part of the general equipment of man.

No matter what methods of control we may use or aspire to for the control of this intolerable weapon, no better way of controlling that weapon is possible than the creation of a world and a society in which that weapon may not be necessary.

ANCIENT METHODS OF POPULATION CONTROL—DISEASE, STARVATION

I am wholly of the belief that if we, as individuals, or as societies or nations do not control the world population, ancient methods will again take hold, disease, starvation, plus an additional and not so ancient method, the use of nuclear weapons which is certainly a splendid way of controlling populations.

"THE UNTHINKABLE NUCLEAR WEAPON"

My concern, at least a part of my concern, with the grave problem of population pressures arises precisely from an initial concern with the unthinkable nuclear weapon.

SUPPORT OF NOBEL WINNERS SPLENDID EXERCISE IN CIVIC RESPONSIBILITY

Senator GRUENING. Thank you very much, Dr. Kusch. I would say that the disclaimers of this panel that they are not particularly

experts in contraception merely emphasizes what a splendid exercise in civic responsibility your presence and your support of this movement demonstrate. I think it is essential that men of good will and men of knowledge extend their activities outside of their own specialty. You and your colleagues have given a very striking, very gratifying, and very heartening demonstration of that.

I would say that you four—representing some 81 other Nobel Prize winners who have achieved eminence and received Nobel Prizes in the fields of physics, chemistry, and medicine—in view of the disastrous consequences that Dr. Kusch has just pointed out if we don't control population, with war taking over throughout the world, would also be entitled to a citation for another Nobel Prize, awarded to those who have promoted peace.

I think that this program, if carried out; namely, population control, would be the greatest move for peace on earth that we can possibly conceive of and I think collectively you and your 81 associates certainly deserve citation in that field as well as in that of physics, chemistry, and medicine.

For the benefit of those who were not able to be present at this and other hearings but will read the printed record, I have directed that pictures of our distinguished witnesses be included in the printed report. It is for this reason that whenever possible the subcommittee has made it a policy to include photographs of the witnesses. We will also include relevant articles which come to our attention concerning the mixed facets of the population crisis.

We are very grateful to all of you for coming here today. Thank you very much.

The four learned men who have contributed to this population dialog clearly are not merely men of science. Above all else, they have spoken to us as humanists, as men whose concern is in the realm of man and his attempts to better his life. As leaders in the efforts of scientists to find new and better ways of understanding and controlling our environment, they also care that the very methods of control which developed do not, in the end, bring disaster upon us. In this, they are much akin to Lewis Mumford, a distinguished observer of man and his urban environment. Mr. Mumford expresses with insight and clarity one of the themes which has dominated the viewpoint of the Nobel Prize winners. In 1961, in his book "The City in History," he wrote:

> Ours is an age in which the increasingly automatic processes of production and urban expansion have displaced the human goals they are supposed to serve. Quantitative production has become, for our mass-minded contemporaries, the only imperative goal: they value quantification without qualification. In physical energy, in industrial productivity, in invention, in knowledge, in population, the same vacuous expansions and explosions prevail. As these activities increase in volume and in tempo, they move further and further away from any humanly desirable objectives. As a result, mankind is threatened with far more formidable inundations than ancient man learned to cope with. To save himself he must turn his attention to the means of controlling, directing, organizing and subordinating to his own biological functions and cultural purposes the insensate forces that would, by their very superabundance, undermine his life (p. 570).

Mr. Mumford is as much a leader in the study of urban living as the men before us today are leaders in the study of science. Born on Long Island, N.Y., in 1895, his life has been devoted to clarifying man's

understanding of the cities in which so many of us live, and the advantages of this crowded and mechanical environment. He has written many books, studied at many schools, and won many medals for his work. At the same time he has passed on to future generations that which he has learned—to students at Stanford, the University of Pennsylvania, and at the Massachusetts Institute of Technology. He is a fellow of the American Academy of Arts and Sciences and a member of such distinguished organizations as the American Institute of Architects, the National Institute of Arts and Letters, the American Philosophical Society, the American Academy of Arts and Letters, the Town Planning Institute of London, the Royal Institute of British Architects, and others.

A pervasive theme of his work is found in "The Culture of Cities," which appeared in 1938. He writes:

> The so-called blighted areas of the metropolis are essentially "do without" areas. If you wish the sight of urban beauty while living in these areas, you must ride in a bus a couple of miles: if you wish a touch of nature, you must travel in a crowded train to the outskirts of the city. Lacking the means to get out, you succumb: Eventually, you may live and die without even recognizing the loss.

Because Mr. Mumford's concern with the "quality of life," a concern shared by our witnesses today and others who have testified and by the subcommittee, I will place in the printed record of the hearings a final chapter of his book "The City in History." Titled "Retrospect and Prospect," this chapter reviews the nature of the city in the past, and then asks where is the city going, and what can we do to improve it, and, by doing so, improve the quality of life of the millions and millions of city dwellers who are already with us, not to mention those millions and millions who may join them, thereby adding a superabundance of population when those already present are not properly cared for.

Our concern must be for the quality of life of those who live now and in the future, for as Mr. Mumford has written:

> No urban existence that pushes the primeval background out of sight, that makes it remote and unavailable, that deprives people of intimate contact with it, hunting, fishing, rambling, exploring, collecting, boating, is likely to produce adequate men and women, able to cope with the realities of life and death.

EXHIBIT 16

RETROSPECT AND PROSPECT

Chapter 18 of the "City in History," by Lewis Mumford (Harcourt, Brace & World, Inc., New York, 1961)

In taking form, the ancient city brought together many scattered organs of the common life, and within its walls promoted their interaction and fusion. The common functions that the city served were important: but the common purposes that emerged through quickened methods of communication and co-operation were even more significant. The city mediated between the cosmic order, revealed by the astronomer priests, and the mitfying enterprises of kingship. The first took form within the temple and its sacred compound, the second within the citadel and the bounding city wall. By polarizing hitherto untapped human aspirations and drawing them together in a central political and religious nucleus, the city was able to cope with the immense generative abundance of neolithic culture.

By means of the order so established, large bodies of men were for the first time brought into effective co-operation. Organized in disciplined work groups, deployed by central command, the original urban populations in Mesopotamia, Egypt, and the Indus Valley controlled flood, repaired storm damage, stored water, remodelled the landscape, built up a great water network for communica-

tion and transportation, and filled the urban reservoirs with human energy available for other collective enterprises. In time, the rulers of the city created an internal fabric of order and justice that gave to the mixed populations of cities, by conscious effort, some of the moral stability and mutual aid of the village. Within the theater of the city new dramas of life were enacted.

But against these improvements we must set the darker contributions of urban civilization: war, slavery, vocational over-specification, and in many places, a persistent orientation toward death. These institutions and culture, and without them the whole elaborate structure becomes meaningless—indeed actively hostile to the purposes of life.

Today the physical dimensions and the human scope of the city have changed; and most of the city's internal functions and structures must be recast to promote effectively the larger purposes that shall be served: the unification of man's inner and outer life, and the progressive unification of mankind itself. The city's active role in future is to bring to the highest pitch of development the variety and individuality of regions, cultures, personalities. These are complementary purposes: their alternative is the current mechanical grinding down of both the landscape and the human personality. Without the city modern man would have no effective defenses against those mechanical collectives that, even now, are ready to make all veritably human life superfluous, except to perform a few subservient functions that the machine has not yet mastered.

Ours is an age in which the increasingly automatic processes of production and urban expansion have displaced the human goals they are supposed to serve. Quantitative production has become, for our mass-minded contemporaries, the only imperative goal; they value quantification without qualification. In physical energy, in industrial productivity, in invention, in knowledge, in population the same vacuous expansions and explosions prevail. As these activities increase in volume and in tempo, they move further and further away from any humanly desirable objectives. As a result, mankind is threatened with far more formidable inundations than ancient man learned to cope with. To save himself he must turn his attention to the means of controlling, directing, organizing, and subordinating to his own biological functions and cultural purposes the insensate forces that would, by their very superabundance, undermine his life. He must curb them and even eliminate them completely when, as in the case of nuclear and bacterial weapons, they threaten his very existence.

Now it is not a river valley, but the whole planet, that must be brought under human control: not an unmanageable flood of water, but even more alarming and malign explosions of energy that might disrupt the entire ecological system on which man's own life and welfare depends. The prime need of our age is to contrive channels for excessive energies and impetuous vitalities that have departed from organic norms and limits: cultural flood control in every field calls for the erection of embankments, dams, reservoirs, to even out the flow and spread it into the final receptacles, the cities and regions, the groups, families, and personalities, who will be able to utilize this energy for their own growth and development. If we were prepared to restore the habitability of the earth and cultivate the empty spaces in the human soul, we should not be so preoccupied with sterile escapist projects for exploring inter-planetary space, or with even more rigorously dehumanized policies based on the strategy of wholesale collective extermination. It is time to come back to earth and confront life in all its organic fecundity, diversity, and creativity, instead of taking refuge in the under-dimensioned world of Post-historic Man.

Modern man, unfortunately, has still to conquer the dangerous aberrations that took institutional form in the cities of the Bronze Age and gave a destructive destination to our highest achievements. Like the rulers of the Bronze Age, we still regard power as the chief manifestation of divinity, or if not that, the main agent of human development. But "absolute power," like "absolute weapons," belongs to the same magico-religious scheme as ritual human sacrifice. Such power destroys the symbiotic co-operation of man with all other aspects of nature, and of men with other men. Living organisms can use only limited amounts of energy. "Too much" or "too little" is equally fatal to organic existence. Organisms, societies, human persons, not least, cities, are delicate devices for regulating energy and putting it to the service of life.

The chief function of the city is to convert power into form, energy into culture, dead matter into the living symbols of art, biological reproduction into social creativity. The positive functions of the city cannot be performed without creating new institutional arrangements, capable of coping with the

vast energies modern man now commands: arrangements just as bold as those that originally transformed the overgrown village and its stronghold into the nucleated, highly organized city.

These necessary changes could hardly be envisaged, were it not for the fact that the negative institutions that accompanied the rise of the city have for the last four centuries been falling into decay, and seemed until recently to be ready to drop into limbo. Kingship by divine right has all but disappeared, even as a moribund idea; and the political functions that were once exercised solely by the palace and the temple, with the coercive aid of the bureaucracy and the army, were during the nineteenth century assumed by a multitude of organizations, corporations, parties, associations, and committees. So, too, the conditions laid down by Aristotle for the abolition of slave labor have now been largely met, through the harnessing of inorganic sources of energy and the invention of automatic machines and utilities. Thus slavery, forced labor, legalized expropriation, class monopoly of knowledge, have been giving way to free labor, social security, universal literacy, free education, open access to knowledge, and the beginnings of universal leisure, such as is necessary for wide participation in political duties. If vast masses of people in Asia, Africa, and South America still live under primitive conditions and depressing poverty, even the ruthless colonialism of the nineteenth century brought to these peoples the ideas that would release them. "The heart of darkness," from Livingstone on to Schweitzer, was pierced by a shaft of light.

In short, the oppressive conditions that limited the development of cities throughout history have begun to disappear. Property, caste, even vocational specialization have—through the graded income tax and the "managerial revolution"—lost most of their hereditary fixation. What Alexis de Tocqueville observed a century ago is now more true than ever: the history of the last eight hundred years is the history of the progressive utilization of classes. This change holds equally of capitalist and communist systems, in a fashion that might have shocked Karl Marx, but would not have surprised John Stuart Mill. For the latter foresaw the conditions of dynamic equilibrium under which the advances of the machine economy might at last be turned to positive human advantage. Until but yesterday, then, it seemed that the negative symbiosis that accompanied the rise of the city was doomed. The task of the emerging city was to give an ideal form to those radically superior conditions of life.

Unfortunately, the evil institutions that accompanied the rise of the ancient city have been resurrected and magnified in our own time: so the ultimate issue is in doubt. Totalitarian rulers have reappeared, sometimes elevated, like Hitler, into deities, or mummified in Pharaoh-fashion after death, for worship, like Lenin and Stalin. Their methods of coercion and terrorism surpass the vilest records of ancient rulers, and the hoary practice of exterminating whole urban populations has even been exercised by the elected leaders of democratic states, wielding powers of instantaneous destruction once reserved to the gods. Everywhere secret knowledge has put an end to effective criticism and democratic control; and the emancipation from manual labor has brought about a new kind of enslavement: abject dependence upon the machine. The monstrous gods of the ancient world have all reappeared, hugely magnified, demanding total human sacrifice. To appease their super-Moloch in the Nuclear Temples, whole nations stand ready, supinely, to throw their children into his fiery furnace.

If these demoralizing tendencies continue, the forces that are now at work will prove uncontrollable and deadly; for the powers man now commands must, unless they are detached from their ancient ties to the citadel, and devoted to human ends, lead from their present state of paranoid suspicion and hatred to a final frenzy of destruction. On the other hand, if the main negative institutions of civilization continue to crumble—that is, if the passing convulsions of totalitarianism mark in fact the death-throes of the old order—is it likely that war will escape the same fate? War was one of the "lethal genes" transmitted by the city from century to century, always doing damage but never yet widely enough to bring civilization itself to an end. That period of tolerance is now over. If civilization does not eliminate war as an open possibility, our nuclear agents will destroy civilization—and possibly exterminate mankind. The vast village populations that were once reservoirs of life will eventually perish with those of the cities.

Should the forces of life, on the other hand, rally together, we shall stand on the verge of a new urban implosion. When cities were first founded, an old

Egyptian scribe tells us, the mission of the founder was to "put the gods in their shrines." The task of the coming city is not essentially different: its mission is to put the highest concerns of man at the center of all his activities: to unite the scattered fragments of the human presonality, turning artificially dismembered men—bureaucrats, specialists, "experts," depersonalized agents—into complete human beings, repairing the damage that has been done by vocational separation, by social segregation, by the over-cultivation of a favored function, by tribalisms and nationalisms, by the absence of organic partnerships and ideal purposes.

Before modern man can gain control over the forces that now threaten his very existence, he must resume possession of himself. This sets the chief mission for the city of the future: that of creating a visible regional and civic structure, designed to make man at home with his deeper self and his larger world, attached to images of human nurture and love.

We must now conceive the city, accordingly, not primarily as a place of business or government, but as an essential organ for expressing and actualizing the new human personality—that of "One World Man." The old separation of man and nature, of townsman and countryman, of Greek and barbarian, of citizen and foreigner, can no longer be maintained: for communication, the entire planet is becoming a village; and as a result, the smallest neighborhood or precinct must be planned as a working model of the larger world. Now it is not the will of a single deified ruler, but the individual and corporate will of its citizens, aiming at self-knowledge, self-government, and self-actualization, that must be embodied in the city. Not industry but education will be the center of their activities; and every process and function will be evaluated and approved just to the extent that it furthers human development, whilst the city itself provides a vivid theater for the spontaneous encounters and challenges and embraces of daily life.

Apparently, the inertia of current civilization still moves toward a worldwide nuclear catastrophe; and even if that fatal event is postponed, it may be a century or more before the possibility can be written off. But happily life has one predictable attribute: it is full of surprises. At the last moment—and our generation may in fact be close to the last moment—the purposes and projects that will redeem our present aimless dynamism may gain the upper hand. When that happens, obstacles that now seem insuperable will melt away; and the vast sums of money and energy, the massive efforts of science and technics, which now go into the building of nuclear bombs, space rockets, and a hundred other cunning devices directly or indirectly attached to dehumanized and de-moralized goals, will be released for the recultivation of the earth and the rebuilding of cities: above all, for the replenishment of the human personality. If once the sterile dreams and sadistic nightmares that obsess the ruling elite are banished, there will be such a release of human vitality as will make the Renascence seem almost a stillbirth.

It would be foolish to predict when or how such a change may come about; and yet it would be even more unrealistic to dismiss it as a possibility, perhaps even an immiment possibility, despite the grip that the myth of the machine still holds on the Western World. Fortunately, the preparations for the change from a power economy to a life economy have been long in the making; and once the reorientation of basic ideas and purposes takes place, the necessary political and physical transformations may swiftly follow. Many of the same forces that are now oriented toward death will then be polarized toward life.

In discussing the apparent stabilization of the birthrate, as manifested throughout Western civilization before 1940, the writer of "The Culture of Cities" then observed: "One can easily imagine a new cult of family life, growing up in the face of some decimating catastrophe, which would necessitate a swift revision in plans for housing and city development: a generous urge toward procreation might clash in policy with the views of the prudent, bent on preserving a barely achieved equilibrium."

To many professional sociologists, captivated by the smooth curves of their population graphs, that seemed a far-fetched, indeed quite unimaginable possibility before the Second World War. But such a spontaneous reaction actually took place shortly after the war broke out, and has continued, despite various "experts" predictions to the contrary, for the last twenty years. Many people who should be vigilantly concerned over the annihilation of mankind through nuclear explosions have concealed that dire possibility from themselves by excessive anxiety over the "population explosion"—without the faintest suspi-

cion, apparently, that the threat of de-population and that of over-population might in fact be connected.

As of today, this resurgence of reproductive activity might be partly explained as a deep instinctual answer to the premature death of scores of millions of people throughout the planet. But even more possibly, it may be the unconscious reaction to the likelihood of an annihilating outburst of nuclear genocide on a planetary scale. As such, every new baby is a blind desperate vote for survival: people who find themselves unable to register an effective political protest against extermination do so by a biological act. In countries where state aid is lacking, young parents often accept a severe privation of goods and an absence of leisure, rather than accept privation of life by forgoing children. The automatic response of every species threatened with extirpation takes the form of excessive reproduction. This is a fundamental observation of ecology.

No profit-oriented, pleasure-dominated economy can cope with such demands: no power-dominated economy can permanently suppress them. Should the same attitude spread toward the organs of education, art, and culture, man's superbioloigcal means of reproduction, it would alter the entire human prospect: for public service would take precedence over private profit, and public funds would be available for the building and rebuilding of villages, neighborhoods, cities, and regions, on more generous lines than the aristocracies of the past were ever able to afford for themselves. Such a change would restore the discipline and the delight of the garden to every aspect of life; and it might do more to balance the birthrate, by its concern with the quality of life, than any other collective measure.

As we have seen, the city has undergone many changes during the last five thousand years; and further changes are doubtless in store. But the innovations that beckon urgently are not in the extension and perfection of physical equipment: still less in multiplying automatic electronic devices for dispersing into formless sub-urban dust the remaining organs of culture. Just the contrary: significant improvements will come only through applying art and thought to the city's central human concerns, with a fresh dedication to the cosmic and ecological processes that enfold all being. We must restore to the city the maternal, life-nurturing functions, the autonomous activities, the symbiotic associations that have long been neglected or suppressed. For the city should be an organ of love; and the best economy of cities is the care and culture of men.

The city first took form as the home of a god: a place where eternal values were represented and divine possibilities revealed. Though the symbols have changed the realities behind them remain. We know now, as never before, that the undisclosed potentialities of life reach far beyond the proud algebraics of contemporary science; and their promises for the further transformations of man are as enchanting as they are inexhaustible. Without the religious perspectives fostered by the city, it is doubtful if more than a small part of man's capacities for living and learning could have developed. Man grows in the image of his gods, and up to the measure they have set. The mixture of divinity, power, and personality that brought the ancient city into existence must be weighed out anew in terms of the ideology and the culture of our own time, and poured into fresh civic, regional, and planetary molds. In order to defeat the insensate forces that now threaten civilization from within, we must transcend the original frustrations and negations that have dogged the city throughout its history. Otherwise the sterile gods of power, unrestrained by organic limits or human goals, will remake man in their own faceless image and bring human history to an end.

The final mission of the city is to further man's conscious participation in the cosmic and the historic process. Through its own complex and enduring structure, the city vastly augments man's ability to interpret these processes and take an active, formative part in them, so that every phase of the drama it stages shall have, to the highest degree possible, the illumination of consciousness, the stamp of purpose, the color of love. That magnification of all the dimensions of life, through emotional communion, rational communication, technological mastery, and above all, dramatic representation, has been the supreme office of the city in history. And it remains the chief reason for the city's continued existence.

Senator GRUENING. We will be in recess until the next meeting on January 26.

(Whereupon, at 11:35 a.m. the hearing was recessed, to reconvene on Wednesday, January 26, 1966.)

POPULATION CRISIS—1966

WEDNESDAY, JANUARY 26, 1966

U.S. SENATE,
SUBCOMMITTEE ON FOREIGN AID EXPENDITURES,
COMMITTEE ON GOVERNMENT OPERATIONS,
Washington, D.C.

The subcommittee met at 10 a.m., pursuant to recess, in room 3302, New Senate Office Building, Senator Ernest Gruening (chairman of the subcommittee) presiding.

Present: Senator Gruening.

Also present: Joseph Lippman, staff director; Herbert W. Beaser, chief counsel; Laura Olson, special consultant on population problems; Mary A. Miller, clerk, Subcommittee on Foreign Aid Expenditures; and Ann M. Grickis, assistant chief clerk, Committee on Government Operations.

Senator GRUENING. The hearing will please come to order. Before proceeding with my opening statement, a photograph taken today of our distinguished witnesses will be placed in the record at this point.

EXHIBIT 17

Witnesses who testified on S. 1676 before the Subcommittee on Foreign Aid Expenditures, January 26, 1966, were Dr. Philip Hauser, Mrs. Emil Chanlett, Dr. Luigi Mastroianni and Dr. Roger Shinn. (Pictured from left to right: Senator Ernest Gruening, chairman; Mrs. Chanlett; Dr. Hauser; Dr. Mastroianni; and Dr. Shinn.)

OPENING STATEMENT OF THE CHAIRMAN

Senator GRUENING. Since the Subcommittee on Foreign Aid Expenditures last met on January 19, President Johnson has traveled to the Midwest to speak at the ceremony held at the Harry S. Truman Center for the Advancement of Peace.

There, in the great heartland of America, the President reaffirmed his concern about the population explosion. Speaking in Independence, Mo., on January 20, President Johnson said:

> . . . we will increase our efforts in the great field of human population. The hungry world cannot be fed until and unless the growth in its resources and the growth in its population come into balance. Each man and woman—and each nation—must make decisions of conscience and policy in the face of this great problem. But the position of the United States of America is clear. We will give our help and support to nations which make their own decisions to insure an effective balance between the numbers of their people and the food they have to eat. And we will push forward the frontiers of research in this important field.

This is President Johnson's seventh statement on this subject since he became President. His concern and his care for mankind in this field are clear. This subcommittee will do what it can to help the President find ways to solve the multiplying problems of our multiplying populations.

A great deal of mail has come to the subcommittee since hearings began on June 22, 1965. Requests for the printed hearings grow in number. The subcommittee hopes to have the 1965 printed hearings available soon. The delay comes because the subcommittee wants the printed hearings to be as valuable research tools—to interested men and women—as is possible. For this reason I have directed that the hearings be indexed. This takes time, but the subcommittee believes the results will be worthwhile.

Across our land men and women are concerned about the population explosion. A man from Raleigh, N.C., the home State of Mrs. Eliska Chanlett who will testify today, writes:

> To refuse to disseminate birth control information and equipment is inhumane. Man was not meant merely to exist—he was meant to enjoy a full life. Spending all your hours to round up sufficient food to stay alive is not living.

BIRTH CONTROL INFORMATION—"TO HELP PREVENT SLUMS IN CITIES AND MISERY IN FAMILIES"

Senator Claiborne Pell has forwarded to the subcommittee the text of a thoughtful wire he received last week from a Catholic mother living in Providence who believes that birth control information should be given freely to all welfare recipients "to help prevent slums in cities and misery in families" because "post partum phychosis is often the result of an unwanted child."

Such communications are typical. With the other letters, they will be incorporated into the printed hearings.

Today the subcommittee will hear testimony from:

1. Dr. Philip M. Hauser, Chicago, Ill., professor of sociology and director, Population Research and Training Center and Chicago Community Inventory, University of Chicago.

2. Mrs. E. T. Chanlett, Chapel Hill, N.C., U.S. delegate to the Inter-American Commission of Women.

3. Dr. Luigi Mastroianni, Jr., Philadelphia, Pa., primate research with intrauterine devices; and

4. Dr. Roger Lincoln Shinn, New York City, professor of applied Christianity and dean of instruction, Union Theological Seminary; adjunct professor of religion, Columbia University.

I call as the subcommittee's first witness Dr. Philip Hauser of Chicago, Ill.

I have a biographical sketch of you, Dr. Hauser, that I will insert in the record at this time. I won't read it. It is very complete. It calls attention to the fact that you have written many books and more than 300 articles and that you edited the "Population Dilemma" for the American Assembly, which was a most worthwhile contribution among your many others.

BIOGRAPHIC STATEMENT: PHILIP M. HAUSER

Dr. Philip M. Hauser is professor of sociology and director of the Population Research and Training Center and Chicago Community Inventory at the University of Chicago.

From 1956 to 1965 he was chairman of the Department of Sociology at the University of Chicago.

He has held many positions with the U.S. Bureau of the Census where he was Acting Director from 1949 to 1950. From 1947 to 1951 he was the U.S. representative to the Population Commission of the United Nations. He has been statistical adviser to the Government of the Union of Burma and to Thailand.

Dr. Hauser is the past president and a fellow of the American Statistical Association. He is past president of the Population Association of America and the Sociological Research Association.

He is a member of the American Philosophical Society, Phi Beta Kappa, Alpha Kappa Delta, Pi Gamma Mu, and Lambda Alpha.

He has written many books and more than 300 articles in journals and in 1963 edited "The Population Dilemma" for the American Assembly.

Dr. Hauser serves on many Government committees, including the Statistical Policy Committee of the Bureau of the Budget and the Advisory Committee on Urban Health, U.S. Public Health Service.

He was born in Chicago on September 27, 1909. He is married and the father of two children.

STATEMENT OF DR. PHILIP M. HAUSER, CHICAGO, ILL., PROFESSOR OF SOCIOLOGY, AND DIRECTOR, POPULATION RESEARCH AND TRAINING CENTER AND CHICAGO COMMUNITY INVENTORY, UNIVERSITY OF CHICAGO

Dr. HAUSER. Mr. Chairman, I am delighted at this opportunity to appear at this significant set of hearings.

Never before in the history of man have the facts and implications of accelerating world population growth so engaged the attention of individual citizens, voluntary organizations, local and national governments, and international private and governmental organizations.

S. 1676 HEARINGS: A SIGNIFICANT DIALOG ON POPULATION FACTS

This should not be surprising, for never before have the dire consequences of present and prospective population growth rates, in the United States as well as abroad, been so patently visible and called so urgently for immediate and drastic positive policy and action. S. 1676 constitutes eloquent testimony to the wisdom and prescience of man, and more particularly to its sponsors, in initiating the significant dialog on population facts and on population problems and their resolutions manifest in these public hearings. For the time has certainly come to alert the American people to foreign and domestic aspects of population problems and to mobilize the enormous resources and powers of the U.S. Government to contribute to their solution.

The facts of world population growth are truly astonishing and indicate why such terms as "population explosion," admittedly nonscientific language, have come into vogue. It took most of the 2 million years man, or his close relative, has been on this planet to achieve a total of 1 billion persons simultaneously alive. This number was not reached until approximately 1825. But it took only 105 years to produce a second billion, a number reached by 1930; and only 30 years to produce a third billion—world population in 1960. Even with allowance for decreased birth rates, the world would have a fourth billion in 17 years, by 1977; a fifth billion in 10 years thereafter, by 1987; and a sixth billion in only 8 years after that, by 1995. The continuation of present trends could swell world population to about 7.5 billion by the end of this century.

This would mean the addition in the next 35 years of a greater population, 4.2 billion, than all of mankind managed to generate simultaneously alive from the beginning of his habitation of this planet to the present instant. In fact, the developing regions alone—Asia, Latin America, and Africa—would, with present trends, increase by about the same number in the next 35 years remaining in this century as the present total population of the world.

RUNAWAY POPULATION GROWTH RATES OBSTRUCT ASPIRATIONS OF DEVELOPING NATIONS

The implications of accelerating world population growth are as ominous as the facts are astonishing. For it has become increasingly clear that present runaway population growth rates are obstructing efforts of the developing nations to achieve their aspirations of higher levels of living. Continued frustration in these efforts will most certainly generate further social unrest, political instability, and threats to world peace. To these prospects must be added the recently generated specter of food shortages in Latin America and Asia. In Latin America food production per capita diminished by 6 percent between 1961 and 1964 and in Asia by 4 percent. The continued inability of have-not nations to achieve goals generated by the "revolution of rising expectations," let alone alleviate threats of widespread famine, could have grave implications for the outcome of the cold war, hot at the moment in Vietnam, and could lead to a worldwide conflagration pitting the have-not against the have nations. There can be no doubt that the dampening of rates of population growth by means of family planning would greatly increase the probabilities of

the developing nations attaining higher levels of living and, thus, greatly diminish the prospects of worldwide social, economic, and political chaos.

In the developing regions excessive population growth is threatening human survival. The extreme character of this prospect has tended to obscure less dire but, nonetheless, grave consequences facing the United States by reason of excessive domestic population growth. The United States is already paying a high price for high fertility climaxed by our postwar baby boom, and faces increasingly serious consequences in the decades ahead because of rapid population increase.

There is no danger in this Nation, for some time to come, of being unable to feed our growing population or of even being unable to continue to increase our level of living as measured by income per capita. But there is great danger that the quality of American life, already adversely affected by the combination of increasing number and increasing density of population, may be further diminished.

We are already paying a high price in the United States for excessive population growth—more particularly for our extraordinary postwar baby boon. Since demobilization in 1946 we have inducted some 80 million babies into our population, which increased since 1946 from 142 to 195 million at the present time.

POPULATION GROWTH ADVERSELY AFFECTS QUALITY OF EDUCATION

In consequence, the quality of education in elementary schools during the fifties, and in secondary schools and colleges during the sixties has been adversely affected; juvenile delinquency and crime have enormously increased in magnitude; unemployment, and especially unemployment of the young, have remained at high levels for many years, until the recent drop as a result of special programs and the Vietnam war; race tensions have been gravely exacerbated, I might say, by increasing rates of population growth which have increased the flow of internal migration from the South and rural areas of the Nation to the North, West, and urban areas; traffic accidents and fatalities have worsened; air and water pollution have reached dangerous levels; urban congestion has increased and the quality of urban living diminished; and governmental interventionism—local, State, and National—has necessarily increased.

INCREASED GOVERNMENT INTERVENTION INEVITABLE RESULT OF POPULATION BOOM

I might say, Mr. Chairman, that many of the complaints about big government derive from the fact that it is just not generally understood to be the inevitable consequence of large population size and high density. These create a highly interdependent, vulnerable community which calls for increased Government interventionism. And they also generate new types of needs, Mr. Chairman, for which the market system as such is incompetent to make provision. I refer to such needs as, for example, the control of air and water pollution.

Needless to say, high fertility and its attendant rapid population increase were by no means the only factors in producing these prob-

lems, but there can be no doubt that rapid population growth has exacerbated all these problems.

WE CANNOT "MOP UP THE FLOOR BEFORE WE HAVE TURNED OFF THE FAUCET"

Moreover, in the United States as in the world as a whole, the highest birth rates are associated with illiteracy or little education and poverty. By the official definition adopted by the Federal Government over one-fifth of all children in the United States under 18 (21.6 percent) are being reared in poverty. But almost half of the children in families with five or more children (49.3 percent) are being reared in poverty. Among whites, about one-sixth of all children, (15.4 percent) and one-third of children in families with five or more children (32.8 percent) are being reared in poverty. Among nonwhites, over three-fifths of all children (62.1 percent) and over four-fifths of children in families with five or more children (81.3 percent) are being reared in poverty. We are undertaking a war against poverty in this Nation. But it is absured to think that we can mop up the floor before we have turned off the faucet.

We shall continue to pay a fearfully high price in human as well as monetary terms, not only among our poor but in the Nation as a whole if our population growth is not further reduced.

U.S. BIRTH RATE DECLINING BUT POPULATION INCREASING

It is true that our birth rate has now been declining since about 1958 but with the doubling of our population of reproductive age in the coming generation as our postwar babies reach marriageable age, we shall continue to experience relatively large population increments. In fact, I might point out, Mr. Chairman, that if our birth rate would decrease by as much as 50 percent, which it is not likely to do, the doubling of our young people of reproductive age would still result in some 4 million and more babies per year for at least the next human generation.

NUMBERS VERSUS QUALITY

The American people will become increasingly faced with the problems of choosing between large numbers and quality of life. It is certain that we cannot continue our past and present rates of population increase and long maintain the quality of life that we have achieved in our remarkable history.

S. 1676 "SHOULD CERTAINLY BECOME LAW"

The provisions of S. 1676 constitute minimum provisions for facing up to the world and our own domestic population problems. They should certainly become law and be implemented. Moreover, the activities which will be initiated under the provisions of S. 1676 will undoubtedly point to further steps to be taken. We have reached a most encouraging stage in population history in the sense that the United States has in the Kennedy and Johnson administrations, for the first time, begun to face up to the population problem at home as well as abroad. In facing our problems at home we are strengthening the moral force with which we can help to solve the problem

abroad. The recent revision of our immigration policy as well as our increasing provisions for transmitting know-how and methods for regulating family size to our own disadvantaged population is placing us in a stronger position to counsel and assist other nations.

"EACH TO HIS OWN METHOD"

It is possible to state at the present time that there are no value systems, including religious value systems, that are opposed to responsible parenthood. Moreover, there are methods of regulating family size available now compatible with every religious and moral belief. There is no longer any strong opposition to limiting population growth rates, although there is still some disagreement about the methods to be employed. But in a pluralistic world and in a pluralistic United States the answer is obviously each to his own method. The important point—the need to regulate family size—must not be overlooked in any dissesion about methods. Moreover, there is evidence that there is increasing tolerance in a number of quarters even about the methods available for birth control. The time has come to push forcefully for the formation of policies and programs that will rid mankind of the grave threats faced by excessive population increase.

Among the economically advanced nations, the prospect of population equilibrium in which a low birth rate by reason of death control is matched with a low birth rate by reason of birth control, is in sight. The advanced nations have but to do a little more of what they are already doing to achieve a new and modern population equilibrium.

In fact, Mr. Chairman, in the United States, with our present death rate, it would be necessary for each couple to have something in excess of two children per couple to maintain a stationary population instead of the present sum of a little over three children per couple.

Senator GRUENING. Dr. Hauser, may I interrupt a moment?

The photographer here would like to have a picture of this group of witnesses. He has another engagement, so if you will suspend for just a moment and the four witnesses come up here.

(A short recess was taken.)

Senator GRUENING. Thank you, Dr. Hauser; will you please continue.

Dr. HAUSER. But among the developing nations, Mr. Chairman, the prospect is not nearly so bright. There has never been an example in history of a people who, having achieved literacy education and a high level of living, did not reduce their birth rate. But, unfortunately the converse of this proposition is also true. We have yet to have the first example of a people steeped in illiteracy and poverty who have managed to reduce their birth rate. This fact constitutes perhaps the world's present gravest challenge.

To date efforts to reduce the birth rate in developing regions have not been crowned with great success. India, for example, has had a national policy to lower population growth rates since 1951, but her national family planning program has as yet produced no measurable decrease in her birth rate. The fact is that the social sciences are still so ignorant that they have not yet achieved the knowledge requisite for motivating and providing incentive to the mass populations in the developing regions to control the number of their children. The fact is that the biomedical sciences are still so ignorant of what causes

babies that they have not yet developed methods of birth control that are acceptable enough, cheap enough, practical enough, and efficacious enough to meet the needs of the mass of the world's population.

EXPANDED RESEARCH NECESSITATES GOVERNMENT ACTION

It is for this reason that the efforts of the Federal Government to further research in the social and biomedical sciences in respect of population control is not only to be applauded but, also, further to be expanded. Despite the efforts of the voluntary organizations, and especially the Population Council, the Ford Foundation, the Rockefeller Foundation, the Planned Parenthood Federation, and a number of other organizations, the problem is of so immense a magnitude that Government action is required.

S. 1676: "A SIGNIFICANT STEP"

S. 1676 is a significant step in the right direction. It should be enacted into law and provide a significant foundation for next steps.

Appended, Mr. Chairman, I have made available to you a pamphlet recently published on "World Population Problems" which I prepared at the invitation of the Foreign Policy Association issued in its "Headline Series" (No. 174). The committee may be interested in the elaboration it contains of my discussion of the population problems in the developing regions of the world, and I might say particularly in the way in which population growth, rapid or excessive growth, operates to retard economic development; and in the consideration it gives to population policy for the United States.

Senator GRUENING. Without objection, I shall direct that the article be made a part of the printed hearing record at this time.

EXHIBIT 18

WORLD POPULATION PROBLEMS

(Philip M. Hauser, No. 174 of the Headline Series of the Foreign Policy Association, December 1965)

POPULATION RETROSPECT

Since the end of World War II, the population problem has become a focus of increasing concern. Currently, the governments of about 40 nations provide some degree of assistance to birth control efforts—ranging from provision of public health facilities for privately sponsored clinics, up through direct governmental operation—as in India and Japan—of national contraceptive programs. In a growing number of countries governmental programs are being initiated with International Planned Parenthood Federation assistance or with aid from American philanthropic organizations, such as the Ford Foundation and the Population Council. Chile and several other Latin American nations, in a region where population growth rates are the highest in the world, are among those initiating birth control programs most recently. The United Nations has sponsored a number of population conferences and published basic research and policy statements dealing with the problem, while its specialized agencies have engaged in a wide range of related activities. The Catholic Church is carrying out a searching reexamination of its traditional stand against birth control. In the United States, Presidents Lyndon B. Johnson, John F. Kennedy and Dwight D. Eisenhower have openly discussed the problem; the Supreme Court has voided Connecticut's anti-birth control statute; state and local governments have adopted programs to disseminate birth control information and make family planning devices and methods available to welfare recipients as well as, in some instances, the general public;

and at the same time, voluntary organizations, foundations and universities are sponsoring research or undertaking a variety of other activities in the field.

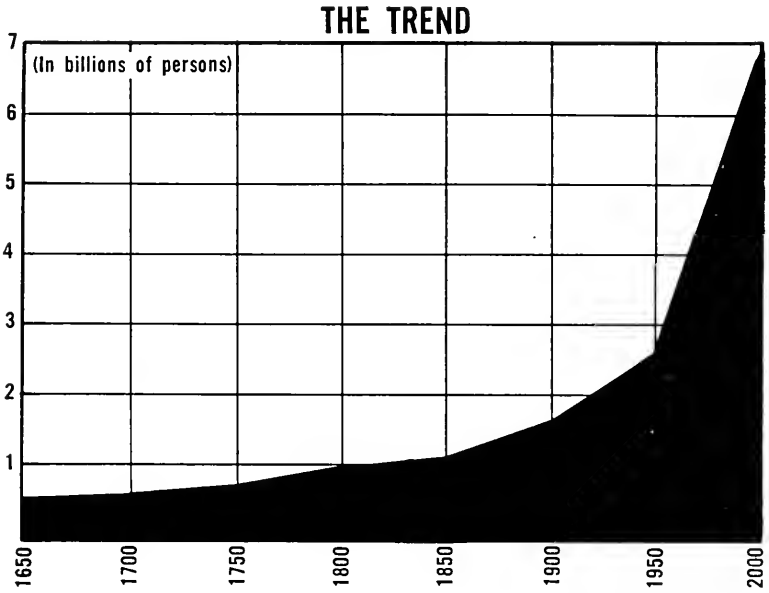
These wide-ranging developments are a consequence of the growing awareness of the facts about population growth and their implications for the world as a whole, for individual nations and for the family and individual. Let us now examine these facts.

World population growth

Although no complete census of mankind has ever been taken, it is possible to reconstruct, within reasonable limits of error, the population of the world in 8000 B.C. at some 10 million. At the beginning of the Christian Era world population probably numbered between 200 million and 300 million. At the beginning of the Modern Era (1650) it reached about 500 million. Today it is over 3 billion. A relatively simple analysis of these numbers discloses that an enormous increase in the rate of population growth has occurred, especially during the past three centuries.

Man, or very close kin to man, has been on the face of the earth for perhaps 2 million years. Although it is not known exactly when *homo sapiens* (the present version of man) first appeared, he was much in evidence in Europe something like 25,000 to 30,000 years ago. According to best estimates, during the 600,000 years of the Old Stone Age, population increased at the rate of 2 percent per 1,000 years. Today it is growing at the rate of 2 percent per year. Thus, in the course of man's habitation on this globe, growth rates have increased a thousandfold.

The present 2 percent increase per year may seem like a small return on investment to persons fortunate enough to have funds out at interest, but it turns out to be a truly astonishing rate of world population growth. For example, in about six and one-half centuries it would give each person only one square foot of land surface on the globe, including mountains, deserts and the arctic wastes. In 1,566 years it would generate a population which would weigh as much as the earth itself.



Bernard P. Wolff

Projections of this type, of course, are not to be interpreted as predictions. They merely help to indicate the meaning of the present rate of growth. They also permit another firm conclusion; namely, that the present rate of world population growth cannot possibly persist for very long into the future. As a matter of fact, eventually, given a finite globe and excluding the possibilities

of exporting human population to outer space, any rate of population growth would in time saturate the globe and exhaust space itself. Thus man is necessarily faced with the problem of halting his rate of increase to maintain some balance between his numbers and the finite dimensions of this planet.

Consider the effect of the remarkable acceleration which man has experienced in his growth rate from still another perspective.

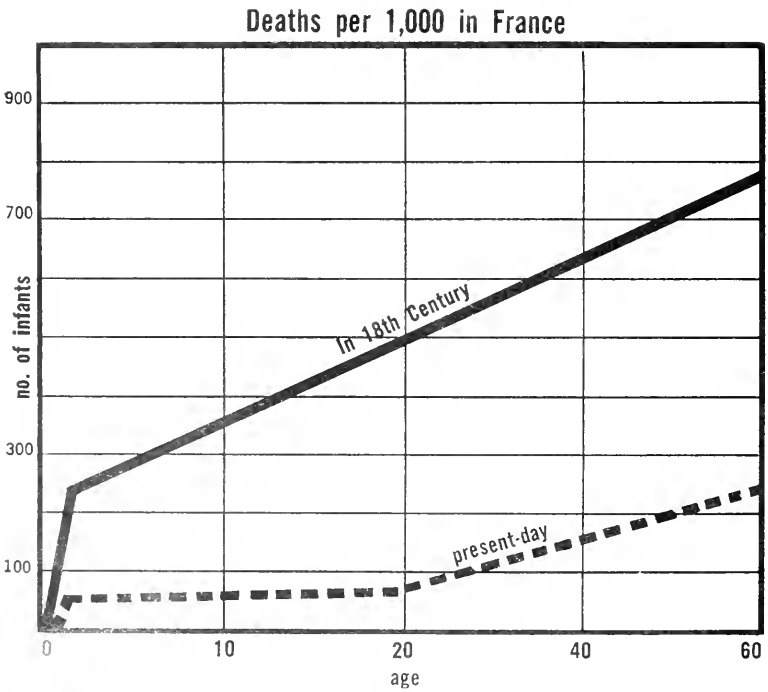
Most of the millennia of man's habitation on the planet had elapsed before there were a billion persons simultaneously alive. This number was not achieved until approximately 1850. By 1930, only 80 years later, 2 billion persons were alive. Thirty years later in 1960, the figure totaled 3 billion. If present trends continue, the total will reach 4 billion in 1977; 5 billion a decade later in 1987; and 6 billion in another eight years in 1995:

Analyses of this type have led demographers (experts on population prob lems) to use emotional and unscientific language on occasion to describe population developments. Such a phrase as "the population explosion" is admittedly unscientific language, but it serves to emphasize the dramatic increase in man's rate of growth and to call attention to its many implications.

Explanation of explosion

Why has the rate of population growth increased so greatly? Although some changes in birth rates were also involved, it is clear that the major factor in the great acceleration of population growth first evident in Europe and areas of European settlement was the decline in the death rate. Three factors contributed to this decline. The first was the general increase in living standards, resulting from technological advances, increased productivity and the achievement of long periods of peace and tranquility by reason of the emergence of relatively powerful and stable central governments. The second major factor was great progress in environmental sanitation and improved personal hygiene. During the 19th century great strides were made in purifying food and water and improving personal cleanliness, which contributed materially to the elimination of parasitic, infectious and contagious diseases. The third major factor is, of course, to be found in the great and growing contribution of modern medicine—enhanced by the recent progress in chemotherapy and the insecticides.

During the Modern Era these developments upset the equilibrium between the birth rate and the death rate that characterized most of the millennia of human existence. (Compare the death rates of 18-century and present-day France on the chart on page 7.) As a result of the decrease in death rates, the 100 million



Bernard P. Wolff

Europeans of 1650 had, three centuries later, about 940 million descendants, including population in the areas colonized by Europeans.

The remarkable growth of population during the latter part of the Modern Era in the industrialized nations continued despite the onset of fertility declines. In France and the United States the birth rate began to drop in the late 18th century and early in the 19th century, and that of Ireland declined before the last quarter of the 19th century. In Northern and Western Europe, in general, birth rates dropped during the fourth quarter of the century and the pattern of decline spread to Southern and Eastern Europe after the turn of the century. Once the fertility decline began in a given country, it tended to continue and to be steeper where it began relatively late. Yet, despite the decreases in birth rate, relatively rapid, even if somewhat dampened, population growth continued in the West because death rates continued to decline faster than birth rates. Appreciable decreases in growth rates occurred only among the nations most seriously affected by the great depression, during which marriage and birth rates plummeted. However, in the aftermath of World War II, fertility increased to accelerate rates of total population growth. The upsurge in birth rates, however, was dissipated in most Western countries by the 50's and is now abating, or promises to abate, in the few nations (the United States, Canada, Australia, New Zealand) in which it persisted to about the 60's.

Prior to World War II, the spectacular decrease in the death rate of the economically advanced nations had not been shared by most of the population of the world. Of the people of non-European stock, only Japan had managed appreciably to increase longevity. The two-thirds of the world's people who lived in the economically underdeveloped areas—Asia, Latin America and Africa—had achieved some decrease in mortality, largely through contact with advanced nations. But most of the world's people prior to World War II had an expectation of life at birth no greater than that which Western Europeans experienced during the Middle Ages.

In consequence, in the first three centuries of the Modern Era, while world population almost quintupled, the continental regions showed great variation in growth rates. During these three centuries, the population of Africa only doubled, that of Asia increased about fivefold and that of Europe, nearly sixfold. The population of Latin America and of North America increased much more rapidly by reason of immigration, the former 23-fold and the latter 167-fold. The areas of European settlement in the Western Hemisphere and in Oceania increased eightfold, so that the population of Europe and European settlement combined increased sevenfold.

This situation has dramatically changed since the end of World War II. A variety of factors, including the advent of the UN and the Specialized Agencies with programs emphasizing economic development and dissemination of chemotherapy and insecticides, have opened up to the mass of people throughout the world the attainment of the 20th-century death rates. Since the end of World War II, declines in mortality among the economically underdeveloped areas of the world have been more dramatic than those which were experienced in the industrialized areas.

Longevity is increasing much more rapidly in the less-developed areas than it did among Europeans and European stock because of the much more powerful means now available for eliminating causes of mortality. For example, the death rate of the Muslim population in Algeria in 1946–47 was higher than that of Sweden in 1771–80, more than a century and a half earlier. By 1955, however, in eight years, the decrease in the death rate in Algeria was greater than that experienced by Sweden during the century 1775–1875. Between 1940 and 1960, Mexico, Costa Rica, Venezuela, Ceylon, Malaya and Singapore were among the nations which decreased their death rates by more than 50 percent.

While death rates have fallen sharply in the underdeveloped areas, birth rates have remained at high levels. Whereas birth rates in the economically advanced areas are mainly between 17 and 23 (per 1,000 persons per year), those of the developing regions are predominantly above 40. As a result, whereas growth rates in industrialized nations have rarely exceeded 2 percent per annum without immigration, annual growth rates in the developing nations are above 2 percent, and many are above 3 percent. A 3 percent per annum growth rate doubles a population in about 24 years. Since the developing nations contain over two-thirds of the world's population, the growth rate for the world as a whole is accelerating despite the fertility decline in the economi-

cally advanced nations which began during the 19th century. Among the non-Western nations of appreciable size, the birth rate has declined only in Japan. The developing nations in Asia, Latin America and Africa, with their 20th-century death rates and medieval birth rates, are not only perpetuating but actually accelerating the world population explosion.

POPULATION PROSPECT

Between 1920 and 1960, world population increased by 60 percent. There was a great difference, however, in the growth rates of world regions grouped by level of economic development. The less-developed regions of the world increased by about 70 percent; the more developed areas by only 40 percent. This contrast suggests a useful way of distinguishing the industrialized nations from the emerging nations, for differences in the level of human reproductivity more sharply differentiate more-developed from less-developed areas than any other criterion, including per capita income, urbanization, literacy, industrialization, etc.

Population projections to 2000

The UN has issued provisional population projections for the world and for the developed and developing areas to the end of the century. They indicate that if present trends were to continue, world population would reach 7.4 billion by 2000.

However, on the assumption that birth rates may decline while mortality continues to decline, the UN has provided another set of projections characterized as "high, low and medium variants." The high variant gives a world population of 6.83 billion in 2000; the medium, 5.96 billion and the low, 5.29 billion. On the basis of its analysis, the UN concludes that "it is safe to estimate the world's population in the year 2000 will be no more than 6.5 billion and no less than 5.6 billion provided unforeseeable events having large consequences in a major portion of the world do not occur."

It should be emphasized that there is no firm evidence that reductions in the birth rate are occurring among the mass illiterate and impoverished populations of Asia, Latin America and Africa. In consequence, the projections based upon the continuation of present trends in these areas cannot be dismissed as outside the range of possibility. Indeed, it may turn out that the UN's variant projections have built into them assumptions of fertility decline that at present may be more accurately described as wishful thinking rather than realistic. However, for purposes of this discussion, the UN high variant projections will be employed even though the UN considers its medium variant as most probable. It should be stressed, however, that the discussion which follows and the conclusions reached would not vary significantly no matter which of the projections is used.

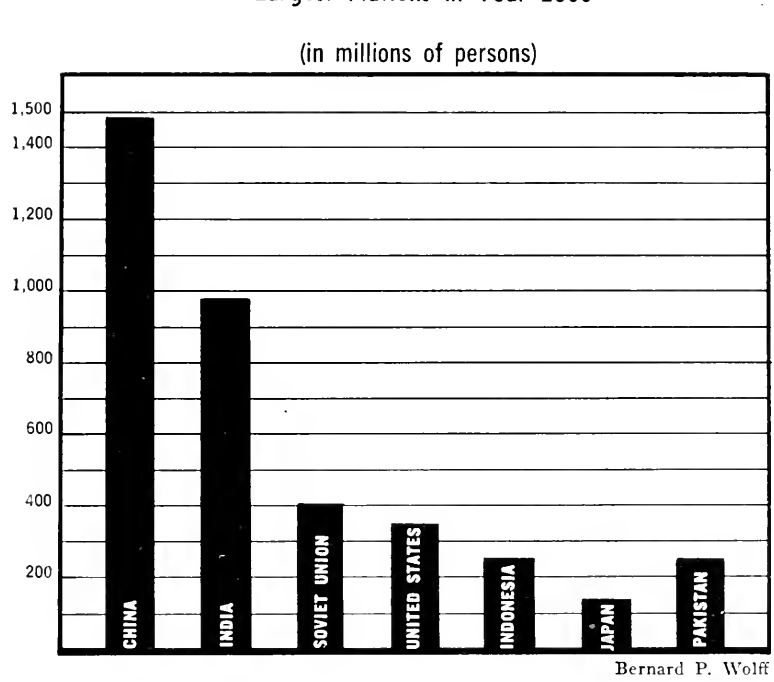
On the basis of the high projection, the present population of the world as a whole would more than double by the year 2000, increasing from about 3 billion in 1960 to 6.8 billion by the year 2000. The effect of declining mortality, especially in the less-developed areas, may be readily seen by comparing anticipated growth in the second half of this century with actual growth during the first half. Between 1900 and 1950 world population increased by less than 1 billion persons. Between 1950 and 2000 the high projection indicates an increase of 4.3 billion persons. That is, the absolute increase in the population of the world during the second half of this century may be almost four and one-third times as great as that of the first half of the century. During the second half of this century there could be a greater increase in world population than was achieved in all the millennia of human existence up to the present time.

Extension of the high variant projection, according to the UN, produces a world population of 14 billion by 2050. Thus, it is possible that some children now entering school will, during their lifetimes, be living in a world with almost five times its present numbers.

Projections for developed and less-developed areas

Of special economic and political import is the differential in the rate of the developed and the developing areas respectively. The UN high projections indicate that the less-dveloped areas would have an aggregate population of about 5.45 billion persons by 2000, whereas the more-developed areas would total 1.37 billion. (See Table 1.) According to these projections, then, the less-

developed areas would increase by 150 percent between 1960 and 2000. In contrast, the more-developed areas would increase by only about 60 percent.



This would mean that six times as many people would be born in the less-developed areas than in the more-developed areas. Moreover, it may be noted that the less-developed areas, according to this projection—a quite plausible one—would increase in the last four decades of this century by a greater number of persons than the total present population of the globe.

TABLE 1.—*World population by major areas 1960–2000, according to the high variant projection of the UN*

[In millions]

Area	1960	1970	1980	1990	2000
World total	3,027.0	3,702	4,569.0	5,632.0	6,828.0
More developed areas	854.0	964	1,086.0	1,224.0	1,377.0
Europe	425.0	458	492.0	526.0	563.0
Soviet Union	214.0	254	296.0	346.0	403.0
Northern America	199.0	233	275.0	323.0	376.0
Oceania	15.7	19	23.4	28.7	34.8
Less developed areas	[1] 2,173.0	2,738	3,483.0	4,408.0	5,451.0
East Asia	[1] 830.0	1,013	1,236.0	1,494.0	1,731.0
South Asia	858.0	1,094	1,401.0	1,768.0	2,183.0
Africa	273.0	348	463.0	629.0	864.0
Latin America	212.0	283	383.0	517.0	673.0
Northern areas [2]	[1] 1,668.0	1,958	2,299.0	2,689.0	3,073.0
Southern areas [3]	1,359.0	1,744	2,270.0	2,943.0	3,755.0

[1] Includes high estimate for mainland China.
[2] Europe, Soviet Union, northern America, and east Asia.
[3] South Asia, Africa, Latin America, and Oceania.

Source: U.N., "Provisional Report on World Population Prospects as Assessed in 1963." United Nations New York, 1964, p. 44.

In 1960 about 71 percent of the world population lived in the less-developed, and only 29 percent in the more-developed, areas. By 2000 it is possible that the population in the less-developed areas will have increased to 80 percent of the world's total and that the proportion of people living in the present more-developed areas will have shrunk to 20 percent.

Examined in greater detail, it may be noted that according to the high projections, there would be great variations in growth rate among the regions within both the more-developed and less-developed areas (Table 1). Within the economically advanced areas, Oceania, with its small numbers, would continue to grow most rapidly; North America and the Soviet Union would increase at about the same rate; Europe would continue to grow relatively slowly.

Among the economically backward regions, Latin America and Africa would increase the fastest, each of them more than tripling between 1960 and the end of the century. South Asia and East Asia, including Communist China, would more than double.

The remarkable upsurge in population growth of the developing regions is dramatized by the contrast in the mid-century populations of North and Latin America with their projected century-end populations. In 1950 North America had a population of about 5 million more than Latin America. By 2000, it is possible that Latin America will exceed the population of North America by 300 million.

Projections for Northern and Southern Areas.—The differentials in growth rate between the northern areas and the southern areas observed between 1920 and 1960 would continue to 2000. The southern areas would almost triple between 1960 and 2000. In contrast, the northern areas would not quite double. Southern areas, with a population of more than 300 million below the northern areas in 1960, may exceed the northern areas by about 700 million by 2000. This shift in relative size could have political significance by the end of the century as will be indicated below.

ECONOMIC AND POLITICAL IMPLICATIONS

The significance of present and prospective rates of population growth is to be found in their implications for levels of living and world politics.

Let us examine first the often discussed relation of population growth to resources and, especially, food supply. A recent analysis of the world resources picture by Joseph L. Fisher and Neal Potter of Resources For The Future, Inc. indicates that there is justification neither for the belief that the world is faced with an imminent exhaustion of critical materials nor that man's ingenuity can resolve all the problems that may be precipitated by the increasing pressure of population upon resources. The picture with respect to raw materials is quite mixed. The world outlook, and that for the developing areas in general, is rather good with respect to sources of energy, especially since atomic energy is potentially inexhaustible. But the prospect for food is quite dismal.

To supply a nutritionally adequate diet to the present populations in the less-developed areas requires almost a doubling of world food output. If an adequate diet is to be achieved for a world population which will more than double by 2000, food production must more than quadruple by the end of the century. This would require greater annual increases in food production than have ever been attained over a prolonged period of time. Moreover, within the past few years, population growth has actually outdistanced growth of food production in many areas. A study completed by Lester R. Brown of the United States Department of Agriculture in 1965 indicates that in Asia food per person has declined by 4 percent since 1961 and in Latin America, by 6 percent. In Africa food production has thus far kept up with population increase, but a decline in per capita food production seems imminent. The increase in food production that followed World War II, during which it greatly declined, levelled off about 1960, and since then it has failed to keep pace with population growth. The prospect of food shortages in Asia, parts of Latin America and Africa within the next decade or so cannot be easily dismissed.

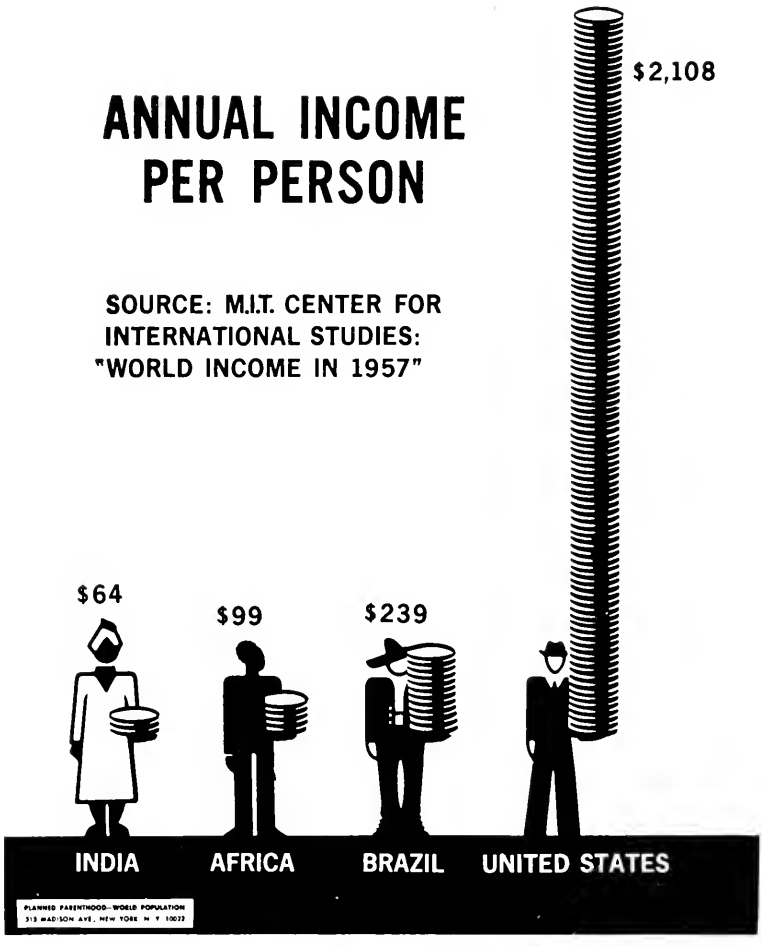
There have been a number of proposals by means of which food production could be appreciably increased. These include increased utilization of food in the seas, including seaweed, direct synthesis of food, and hydroponics. But there is no immediate prospect that any of these means of increasing the food supply will actually be achieved in the near future. Moreover, even if mass starvation does not occur in the underdeveloped areas and the present standards of living

are maintained to the end of the century, continued explosive population growth will be a factor contributing to world instability. This is because of the problems that will arise as a result of the failure of the underdeveloped countries to achieve substantially higher standards of living.

The role of population in influencing the world's political and economic future during the remainder of the century may be better comprehended if we consider briefly a number of pertinent developments, their interrelationships and their possible consequences.

The revolution of rising expectations

Throughout history there have been important differences in standards of living both among and within nations. The fact, however, has gained a new significance in recent times, and particularly since the end of World War II. The world has been swept by the "revolution of rising expectations," to use a popular phrase.



The "have-not" nations of the world are striving to achieve higher living standards. They have made economic development a major national aspiration. This has also become an international goal as set forth in the charter of the UN and as manifest in the foreign aid programs of many of the economically advanced nations, both governmental and private. It is thus probably correct to

say that there never was a time in the history of man when the achievement of higher living standards was as universal a goal among all of mankind.

"Have" and "have-not" nations

In 1962 per capita product by continents ranged from $124 in Asia and $128 in Africa to $2,866 in North America. Asia, with about 56 percent of the world's population, had but 14 percent of the world's gross national product (GNP). In contrast, North America, together with Northern, Western and Central Europe, with less than 12 percent of the world's population, had 59 percent of the world's GNP.

Per capita product in 1962 averaged $489 for the world as a whole. The continental subregions with per capita products above the world average, one measure of more-developed areas, had an average per capita product of $1,504. In contrast, the continental regions with per capita products below the world average, the less-developed areas, had a per capita product per year of but $153.

Despite multilateral and bilateral efforts to assist the developing nations to achieve higher standards of living, such evidence as is available indicates that the disparities between "have" and "have-not" nations are increasing rather than decreasing. "Have-not" nations, relative to "have" nations, are doubly handicapped in efforts to reduce the disparity in standards of living. First, by reason of their small productive and technological base, even relatively large percentage rates of growth produce rather small absolute increments in standards of living. In contrast the increments attained by the advanced nations are relatively large, even with low rates of economic growth. For example, a 10 percent increase in product in Asia produces an absolute annual increment of about $12 per capita; in North America a 10 percent increase produces an increment of $278 per capita.

Second, the rapid rate of population growth in the developing areas requires more rapid rates of economic growth than in the developed areas merely to maintain already existing standards of living. North America, for example, during the remainder of this century, can maintain its present standard of living by an economic growth rate of 1.6 percent per annum. Asia, in contrast, to maintain even its present standard of living, must achieve an economic growth rate of 2.1 percent per annum.

Population growth and standards of living

There is an inverse correlation between present and projected rates of population growth and the standard of living. For example, of the eight continental subregions which had growth rates above the average for the world as projected from 1962 to 2000, seven had a per capita product below the average for the world. Contrariwise, in every one of the continental regions in which per capita product is above the world average, the annual population growth rate projected between 1962 and 2000 is below that of the world average.

In general, for the world as a whole, poverty is associated with relatively high rates of population increase. Among poor European nations, however, despite their poverty, relatively low population growth rates obtain. It is significant that per capita product in the poor countries of Europe is about four to five times that of the poorest countries in Asia and almost twice that of the poorest countries in South and Central America.

Impact of rapid population growth

Study of the relationship between population growth and composition and economic development in recent years has disclosed that population factors operate to obstruct efforts to achieve higher standards of living. Per capita product cannot be increased unless aggregate output increases more rapidly than does population. Rapid population growth obstructs increases in per capita product in a number of ways. (These will be considered below along with the gains to be achieved from the reduction of fertility.)

Impact of urbanization

Since 1800 we have been able to measure the rate of world urbanization (the changing proportion of total population living in cities) with reasonable accuracy. During the 19th century the growth of cities received its major impetus from developments in Europe and North America. However, during the 20th century the major impetus to urbanization has come from the newly emerging nations of Asia, Latin America and Africa.

Rapid urbanization in the developing areas has a special significance in any effort to evaluate factors associated with world tensions. Poverty and frustration concentrated in the urban settings have a potential for generating social unrest, political instability and threats to peace of a much greater magnitude than poverty and frustration dispersed widely over the countryside. (Urbanization in the developing areas will be further discussed below.)

Impact of world political alignment

Although the classification is admittedly loose, it is convenient to divide the world into three groupings: free world, Communist and neutral, or uncommitted, nations. One third of the world's population is to be found in each of these groupings.

For much of the postwar period, the free world and the Communist nations have been trying to win the allegiance of the neutral, or uncommitted, bloc. This is evident in the prolonged struggle for the allegiance of the peoples of South and Southeast Asia. More recently, it has given rise to increasingly intense competition in Africa; and it continues to constitute a threat to Latin America's identification with the West, especially since the advent of Castro's Cuba.

The outcome of this competition will undoubtedly be affected by the ability of the newly developing nations to control the growth of their population and thereby to achieve higher standards of living. Certainly their failure to do so would leave the "have-not" nonaligned nations of the world more open to the blandishments of the Soviet Union and Communist China. These two countries are in the advantageous position of appealing to anti-imperialist sentiment, of blaming Western imperialism for the present poverty of the underdeveloped world and of being able, thus far, to exploit with some success the inequities and iniquities of economic and social organization in many less-developed nations. Moreover, the Communist appeal in terms of agrarian reform, racial equality and fuller stomachs seems on the whole to be more effective than the rather abstract Western appeal for freedom and democracy.

To the extent, then, that population growth is a factor impeding economic development, it is one that contributes, however indirectly, to social unrest, political instability and threats to peace that are exacerbated by the cold war.

Impact on Sino-Soviet rift

Since 1956 Soviet Russia and Communist China have been increasingly at odds. The ideological causes of the rift between the two Communist giants have been well publicized, but it is interesting to consider whether the disparity in their economic development may not be a contributing factor.

For all Communist countries the annual per capita product in 1962 was $269. Among them, however, per capita product ranged from $94 in Southeast Asia to an estimated $790 in the U.S.S.R. With a population approximating 700 million and a growth rate of about 2 percent per year, China is a "have-not" nation. Its continuing failure to control population growth could increase pressures for expansion that would constitute a threat not only to its neighbors to the south but also to its Communist neighbors to the north.

North-South alignment?

The Sino-Soviet rift may also contribute to increased tensions between the "have" and "have-not" nations elsewhere in the world. Certainly China, in attempting to form its own block, is seeking allies primarily among the poorest nations. And it is not impossible that the U.S.S.R. will find it has more in common with the "have" than with the "have-not" nations, especially if it is successful in its efforts to advance consumption levels.

Thus, it may be that coming decades may witness the emergence of a North-South rather than an East-West alignment. The southern areas which, with the exception of Oceania, are economically backward may achieve an increasing awareness of an identity of interests. If such a North-South alignment were to develop, Oceania would be identified with the "have" nations and East Asia, including Communist China, with the "have-nots." The need for population control, therefore, will still remain crucial to the alleviation of world tensions even if Russia and the West find a *modus vivendi*.

GAINS FROM POPULATION CONTROL

Economic development has as its objective the raising of the standards of living of a people. The population of a nation, which is its human resource, not

only reaps the gains of economic development through increased per capita income but also plays a vital role in achieving them. In the contemporary situation, four aspects of the population problem in the less-developed areas are operating to retard economic development. These are the relatively high rate of population growth, unfavorable age structure, imbalanced population distribution and inadequately educated and trained manpower. All of these obstructions to economic development are amenable to control. But they cannot be controlled unless the ways in which they hamper efforts to raise standards of living are fully understood, relevant policies are formulated and necessary programs put into operation. The relation between each of these factors and economic development is briefly discussed below.

The standard of living cannot be raised unless total output increases more rapidly than total population. The greater the rate of population increase, the higher must be the rate of economic growth to effect any increase in per capita income.

Given their projected rates of population growth, the less-developed regions must achieve unprecedented increases in GNP over the next three and a half decades to equal, by 2000, the standards of living in Northern and Western Europe as they were in 1962. That is, Asia must achieve a sustained annual economic growth rate of about 9 percent. Africa, about 10 percent and Latin America, about 7 percent. Similarly, given their projected population increases, Asia and Africa, to match the higher 1962 North American standard of living by the year 2000, must achieve a GNP growth rate of about 11 percent per annum for the remainder of the century and Latin America, a GNP growth of about 9 percent per annum.

The magnitude of this task should be evident. In fact, unless the rates of population growth in the underdeveloped areas diminish, they cannot possibly match 1962 European standards of living, let alone the North American level, by the end of the century. At best, given their projected rates of population growth, they can achieve only meager advances in living standards.

With rapid population growth there is a need for capital investment to achieve economic advance. To effect a step-up in output, additional investment must be great enough to produce income increments adequate to raise per capita income. Capital-income ratios indicate that to obtain an added unit of income, approximately three units of capital are required. Populations increasing at a rate of 3 percent per year, already approximately by Latin America and other parts of the world and in prospect for most of the less-developed areas in this century, must therefore achieve a saving and investment of approximately 9 percent per annum merely to maintain their present low levels of per capita income. Yet many of the economically less-developed societies find it difficult to achieve a savings rate of more than 4 to 5 percent. It is doubtful that India, even with its prodigious efforts toward economic development, has as yet achieved a savings rate in excess of 10 percent. Thus, even with outside capital, it has found the task of keeping ahead of its 2 percent per annum increase in population most difficult. This is why India has increased its efforts to control population growth.

Rapid population increase, it must be observed, is not necessarily a barrier to economic development. There can be little doubt that at certain stages in the history of the present economically advanced nations it has actually contributed to higher standards of living. But the man-resources ratio in these nations was, on the whole, much more favorable at their initial stages of economic growth than is true of many less-developed areas today. In North America during the 19th century, a resource-rich unexploited continent, rapid population increase undoubtedly contributed to increased standards of living. For with its low man-resources ratio, rapid population growth contributed to economies of large-scale production. In those less-developed areas today where there is already a high man-resources ratio, rapid population growth contributes not to economies of large-scale production, but to diminishing returns. However, it should be noted that in those developing areas where population densities are still low, rapid growth may contribute to economic growth provided capital and other inputs can meet the population challenge.

Unfavorable age structure

High fertility areas have larger proportions of young persons than do low fertility areas. In most of the underdeveloped countries about 40 percent or more of the total population is under 15 years of age. In contrast, in Europe

and in North America between 25 and 30 percent of the total population is under 15 years of age. Continued high fertility and rapid population growth in the developing areas will mean continuation of the relatively high proportion of young people.

The relatively large proportion of persons under 15 years of age in the less-developed regions of the world may be interpreted as "unfavorable" to economic development for at least two reasons. First, it tends to reduce labor input per capita and, all other things being equal, tends therefore to reduce income per capita. Second, it requires that a greater part of limited resources be allocated to "social" investment rather than to "economic" investment. That is, the more youthful the population the greater is the proportion of total savings that must be devoted to the rearing of the young and the smaller is the proportion available for investment in agricultural or industrial projects.

It should be noted that changes in age structure are the result of changes in mortality as well as in fertility. Reductions in the death rate occur first of all and disproportionately among infants and youths. In consequence, reduced mortality tends to increase greatly the proportion of young persons in a population. Reductions in the birth rate, on the contrary, tend to decrease the proportion of young persons in a population. Over a period of time the effect of reduced birth rates will more than offset that of reduced mortality, and the proportion of older people will increase.

A UN study has analyzed the effect of reductions in fertility and mortality on the active male workers who must produce the wealth necessary to support the needs of the whole population. This study shows that reduction of mortality increases the burden of the workers, whereas the reduction of fertility reduces it. All other things being equal, the greater the ratio of workers in a population the greater will be its income per capita.

High fertility, then, under conditions of declining mortality, has the effect of retarding economic development. It not only is responsible for high rates of total population growth, but also produces an age structure which adversely affects economic growth.

Imbalance in population distribution

Industrialization inevitably leads to increasing urbanization. However, the less-developed areas of Asia, Latin America and Africa, because they have such a vast total population, have more people living in cities of 20,000 or more than do the industrialized nations of Europe and North America combined. In 1950 Asia, Latin America and Africa contained over 45 percent of the world's residents of cities of 20,000 or more; whereas Europe (excluding the U.S.S.R.) and North America contained but 41 percent living in cities of this size.

The implications of urbanization for the advanced and for the less-developed nations are different. In the former, urbanization is both an antecedent and a consequence of high standards of living. It makes possible and promotes the division of labor and specialization, with resulting higher per capita income. However, in the newly developing areas, urbanization tends to be the product of quite different factors and is not accompanied by corresponding increases in productivity and living standards. It is less the result of indigenous economic development and the pull to the urban centers because of greater economic opportunity than a reflection of the push from overpopulated rural areas. In many emerging nations it also reflects the disruption and disorganization produced by war and by postwar political instability, which have created a troubled countryside and large numbers of refugees.

Compared with the advanced nations at similar levels of urbanization, a much smaller proportion of the labor force in the developing nations is engaged in nonagricultural and especially mechanized industrial occupations. Such areas face a difficult problem in attaining levels of economic development adequate to support their present, let alone their prospective, urban populations.

Given the present levels of productivity and limited savings in the less-developed areas, a major common problem relates to the allocation of resources for the improvement of agriculture, on the one hand, and the development of industrial sectors of the economy, on the other. In many nations improvement in agricultural productivity may contribute more to rising standards of living than efforts to induce industrialization. The claims of large and politically important urban populations may require disproportionate allocations of limited resources to the development of the urban, rather than the agricultural, sectors of the economy.

The achievement of adequate balance between agricultural and urban industrial development is complicated by difficult problems of dividing limited savings between "social" and "productive" investment. This problem finds its most acute form in the city. Urban areas in the less-developed nations are characterized by inadequate infrastructure development which precludes the usual amenities of city existence found in advanced nations. There is a great need and much temptation to allocate resources to social purposes such as the elimination of shanty towns, piped water, sewage, better housing and social services for newcomers. Investment of this type, badly needed as it may be, can be made only at the expense of deceased investment in agricultural and industrial productive facilities.

These already acute problems are intensified by the large migratory flows of population from rural to urban areas. This fact has been recognized by a number of nations which are making efforts to decelerate such migration by means of programs designed to raise the standard of living in the countryside. It may well be that the quickest way to increase standards of living among city dwellers lies in agrarian reform, including modification of outmoded land tenure systems, which would give the peasants a stake in the land and spur higher productivity.

An imbalanced distribution of rural-urban population may, then, operate to retard economic growth. Needless to say, such an imbalance is aggravated by excessively high rates of population increase. The dampening of population growth rates would undoubtedly bring about a decline in the rate of urbanization and make a more balanced population distribution possible.

Quality of human resources

Population has two dimensions: quantity and quality. Thus far we have been concerned with problems of quantity. Still another problem in the underdeveloped areas is the low general educational level and low skills of the population at large and, most importantly, of the labor force. High levels of illiteracy and the absence of a skilled labor force serve as major barriers to economic growth, particularly in the urban and industrial sectors of the economy.

It is becoming recognized that perhaps the most important single type of investment for achieving economic development is investment in human resources. In fact, many economists argue that investment in education and skills may provide a greater return than any other input. Moreover, evidence is mounting that only a relatively small part of increased output is the result of increases in the conventionally regarded inputs of labor, land and capital combined. For example, recent studies suggest that for the period 1899–1953 in the United States, only a third of increased output may be accounted for by increased input of labor, land and capital. The remaining two-thirds seems to be the result of the combination of technology, organization and investment in humans, together with all other factors. Moreover, the data suggest that of these latter types of input, investment in humans, that is, in the improved quality of population through more education and training, may be the most important.

There is little need for elaborating the need for improving the level of education of a population as an important element in achieving economic development. High fertility, however, constitutes a major barrier to raising the educational level of a nation.

An impoverished nation, with uncontrolled fertility has a smaller per capita investment available for education. The fewer the number of children the greater is the amount, out of limited savings, available for the education and training of each child. A UN study has demonstrated that as mortality decreases while fertility remains fixed at a high level, total school construction needs may more than double. On the other hand, a decrease in the birth rate as mortality decreases produces a substantial decline in school construction requirements.

Examples of gains achievable

Economic development policies and programs must take into account the role of population factors, particularly the aspects of population discussed above.

In the contemporary world situation, given the great declines in mortality achieved and in prospect, a decrease in the birth rate would simultaneously reduce rates of population increase, favorably alter the age structure, help to effect better balance between urban and rural population distribution and permit more adequate and effective investment in human resources.

Ansley J. Coale of Princeton University has devised interesting mathematical tables to show the economic gains that might be obtained if birth rates in emerg-

ing nations with a population growth rate of 3 percent annually are reduced. For example, he demonstrates that if in a given country the birth rate can be lowered by 50 percent in 25 years—with declining mortality—its population within a half century would be about half of what it would be with unchanged fertility. A developing country with an initial population of 1 million (with a 3 percent growth rate) would have a population of 5.7 million at the end of 50 years. If its fertility rates fell by 2 percent a year for 25 years and then remained unchanged, it would have less than 3 million people five decades later. In 150 years the resulting populations, on these assumptions, would be 245 million and 10 million respectively.

The impact on the age structure of the population would be increasingly significant. With the lowered birth rate, the proportion of young persons would decline by 10 percentage points, or by 23 percent, in 30 years and by 14 percentage points, or by 33 percent, after 60 years.

As for the effect of reduced birth rates on per capita income, Coale's findings are especially significant. With reduced, as compared with sustained, fertility, a developing nation could increase income per consumer by 41 percent in 30 years and by 109 percent in 60 years. Moreover, it makes a big difference whether fertility declines at once or does not. Those nations that wait for increased industralization and urbanization to bring about an "automatic" drop in birth rates will pay a high cost in deferred income gains.

WHAT POPULATION POLICY FOR THE U.S.?

Until recently the United States has had implicit rather than explicit population policies both on the international and the domestic fronts. Cumulative and accelerating developments have, however, forced the government to pursue overt population policies at home and abroad. (A chronology of these developments with respect to foreign affairs is contained in *Intercom*, Foreign Policy Association, Jan.–Feb. 1964.)

After about four years of debate on the position the United States government should take with respect to other countries' population problems, a State Department officer in December 1962 announced that the United States would "help other countries, upon request, to find potential sources of information and assistance on ways and means of dealing with population problems." Since then there has been a series of pronouncements and activities by the government on population matters. But since policy is still being formulated and action programs are barely under way, it is important to consider the issues which are involved.

First of all, it may be noted that consensus has been virtually achieved, both international as well as within the United States, on the need to dampen rates of world population growth. There are only two ways by which world population growth can be decreased. One is by increasing the death rate (or refusing to lower it); and the other is by decreasing the birth rate. The adoption of a policy to increase the death rate is universally untenable. There remains, in effect, then, only one way to decelerate rates of population growth—fertility control.

Encouraging developments

There is much ground for encouragement in the fact that Roman Catholicism and Marxist communism, which have been slow to recognize this need and which have resisted efforts to control fertility, have perceptibly modified their stand within the past few years.

Although Pope Pius XII recognized the need to control population growth in 1951, it was not until after the general effort initiated by Pope John XXIII and continued by the incumbent Pope Paul VI to update the Roman Catholic Church's position in the modern world that recognition of the need for "responsible parenthood" seems to have gained ascendancy over the elements in the Church which favor unrestricted fertility. As this HEADLINE SERIES goes to press, the Vatican Ecumenical Council upheld the traditional Church ban on artificial birth control, but left the way open to a change in this position in the light of a new affirmation of the dignity of conjugal love. The issue remains unsettled until Pope Paul VI, who has appointed a special commission to study the problem, reaches a final decision. But regardless of whether methods other than periodic continence (the "rhythm method") are countenanced, the fact is the Church does not oppose responsible parenthood and has condoned a method of controlling fertility that, despite its limitations, does possess some efficacy.

However, because of deficiencies of the rhythm method, many Catholics, as reported by reliable studies in the United States and in Europe, actually use disapproved but more effective methods of family planning. This is certainly one of the factors that has led to the reconsideration of the position of the Church on artificial birth control methods. Whatever the ultimate official position of the Church may be, it is clear that many Catholics throughout the world are actually restricting the size of their families; and, frequently, by methods regarded as illicit by their Church. (In the United States, for example, in 1955, 57 percent of all Catholic couples were restricting family size and 30 percent were using methods banned by the Church. Of Catholic couples married 10 years or more, 80 percent were regulating family size and 50 percent were using condemned methods.)

The increasing gravity of the population outlook and the hardships imposed on Catholics by the traditional position of the Church confront Roman Catholicism with the necessity to resolve the dilemma created by the conflict between its historic posture and the realities of the contemporary world situation as the latter affects Catholics and non-Catholics alike.

The Communist nations, on the basis of their interpretations of Karl Marx, until relatively recently, also opposed population control. The Communist world has considered birth control as an instrument by means of which "imperialist capitalist powers" attempt "to subdue and exploit" the "have-not" peoples. But Communist China, in 1953, after a census had disclosed that there were 100 million more Chinese (582.6 million) than had been previously estimated, was quick to attempt to slow down its rate of population increase; and the Soviet Union and other Communist nations have reversed the position they took at the World Population Conference in Rome in 1954. The Soviet Union is no longer opposed to fertility control. It does, however, believe that this will come about automatically as a consequence of industrialization and urbanization and, therefore, need not be actively promoted.

Not unrelated to the changing positions of the Roman Catholic Church and the Communist nations are the rapidly declining birth rates both among Catholic and most Communist populations. The evidence is clear that both the Catholic populations in the economically advanced nations and the mass populations in the Western Communist countries have sharply reduced their birth rates within the past 15 years. For example, the birth rates in such Catholic countries as Belgium, France, Italy, Portugal and Spain and in such Communist countries as Bulgaria, Czechoslovakia, Hungary, Poland, Rumania, the U.S.S.R. and Yugoslavia are at levels below or not unlike those of Protestant countries and are obviously being controlled. The growing consensus on the need to control fertility to decrease rates of population growth is manifest also in the changes in the official positions of the UN and the World Health Organization (WHO), toward the formulation of which the United States has contribuuted.

Opposition to fertility control

What are, then, the issues which remain to be resolved and the action programs which remain to be mounted? The issues may be stated in terms of the remaining opposition to fertility control.

There is, first of all, the argument that to increase standards of living the emphasis must be placed on economic development rather than population control. It has been pointed out, and appropriately so, that fertility control alone will not necessarily increase income per capita.

The answer to this argument lies in recognition of the need *simultaneously to control population growth and to increase productivity.* Population control is not a substitute for investment in capital goods or in human resources, nor is it a substitute for achieving production know-how and entrepreneurship. Population control, however, may well facilitate and make more effective more direct efforts to achieve economic advances. The fact that fertility control alone will not necessarily produce higher standards of living must not be taken as grounds for neglecting it as an element in a program of economic development.

Second, there is the argument, of which the noted economist, Colin Clark, is perhaps the outstanding exponent, that fertility control may retard rather than promote economic advances because it would diminish incentive. That is, according to this thesis, increasing misery produced by growing population pressure on land and other resources provides motivation to man to improve his lot. To the extent that diminished population growth removes this pressure and, therefore, incentive for advance, standards of living would worsen rather than

improve. To anyone who has lived in, or even visited, the less-developed areas in Asia, Latin America or Africa, this argument is immediately seen as defective. It is simply unrealistic, if not blind, to hold that, for example, what India needs is more misery than she already possesses to generate motivation for advance.

A third argument against the need to control population to achieve economic development flows from the socialist and Communist thesis that world poverty is largely the result of the maldistribution of the world's production. While a more equitable distribution of world production would undoubtedly raise the living level of the "have-not" peoples, it is not difficult to demonstrate that it would tend to effect universal poverty rather than affluence. In 1962, world average product per capita was $489. This was 17 percent of per capita product in North America and about half of per capita product in Europe. Total world production of goods and services in 1962 could support only 1.5 billion people at the European level of living and, at the North American level of living, only 500 million people, as compared with the actual population of over 3 billion people. Thus, in 1962, by these criteria, it may be said either that the world was overpopulated by some 1.5 billion to 2.5 billion persons or that world production was much too low to eliminate poverty. In either case it is clear that the achievement of high world standards of living requires great increases in world productivity and production rather than a mere redistribution of the world's product.

A fourth contention against efforts to induce fertility control is found in the present position of the Soviet Union that birth rates will come down automatically with increased industrialization and urbanization. There is a basis for this position in the sense that there are no examples of peoples who have achieved high levels of industrialization and urbanization, and with them literacy and higher levels of living, among whom the birth rate has not fallen. But it is also true in general that there has been a considerable lag between reaching relatively high levels of industrialization and urbanization and lowered birth rates.

The industrial nations achieved their development and low birth rates while their populations were relatively sparse in relation to land and other resources. In many of the less-developed nations, and especially those containing the bulk of the world's population, population densities are already so great that economic development is being retarded. Moreover, even if the underdeveloped nations are able to achieve industrialization with their present growth rates, they would be much less able than were the more-developed nations to pay the high price of a great lag between industrialization and lowered birth rates. In consequence, it would be very costly, and it is therefore, unreasonable to oppose positive efforts to reduce rates of population growth by means of fertility control programs.

By reason, then, of the relation of population growth to economic development and world politics, and the gains to be achieved through fertility control, the recently adopted United States policy of recognizing the need for reducing growth rates in the world as a whole and especially in the less-developed areas is sound. However, a number of specific questions still remain to be answered on the best method of implementing it.

Current U.S. efforts

At the present time the government of the United States is engaged in a number of research activities in the population field and is also providing assistance to nations which request aid on population control.

Research on reproduction or birth control is being conducted or supported by the National Institutes of Health and the Bureau of State Services in the Public Health Service, the Atomic Energy Commission, the Department of Interior and the National Science Foundation. Some of the activities of the agencies, however, are very limited. At the present time private agencies, including the Ford Foundation, the Rockefeller Foundation, the Population Council and a number of pharmaceutical companies are undoubtedly financing more research in the field of human reproduction than is the Federal government.

In the field of demography the Federal government is supporting programs designed both to illuminate population problems and to train competent demographic personnel. The Bureau of the Census conducts research on population in other countries of the world, as well as in the United States, and provides technical assistance abroad through the Agency for International Development (AID), as well as training within the bureau, for the development of the statistical and demographic competence of foreign personnel.

The AID, in a circular dated May 11, 1963, announced the readiness of the United States to assist developing countries in the area of demography. AID presently refers sociobiological questions to the United States Public Health Service and the Children's Bureau, and deals with the demographic questions by providing support for research and training facilities within the developing nations themselves or through technical assistance.

Issues for the U.S.

Needless to say, these activities represent a bare beginning in relation to the needs which exist. Extension of United States government programs involves the resolution of such additional questions as, Should the government (1) openly and on a large scale provide birth control knowledge, devices and financial aid in promoting their use to developing countries which request them? (2) expand its assistance through bilateral programs or multilateral agencies such as the UN or its Specialized Agencies, especially WHO? (3) refuse other forms of technical assistance to developing nations unless they also agree to undertake steps toward fertility control?

The latter is undoubtedly the most significant of the questions and requires a definitive answer. Certainly, no matter how great the need may be, the United States should not attempt to coerce other nations to make population control their national policies as a condition for being eligible for other forms of technical assistance. On the other hand, in situations in which excessive population growth rates may be obstructing development, it would be less than astute not to direct the attention of a developing nation to the need for population control and not to offer assistance for fertility control. The decision with respect to population control, however, must be made by the foreign nation itself.

With respect to the first question, whether the government should provide openly and on a large scale birth control knowledge, devices and financial assistance in promoting them, the answer should be definitely in the affirmative. It would be absurd in the circumstances, and actually inconsistent with prevalent attitudes in the United States as indicated by public opinion polls, not to make available to developing nations any assistance we can give to help them control runaway population growth. The only qualification that should be made is that the information or supplies provided should be consistent with their prevalent values and freely chosen by them.

Finally, in respect to the question of bilateral or multilateral arrangements, a definitive answer is not too clear. The same arguments apply here as to general technical assistance. It would probably be better, in the long run, for all technical assistance to be multilateral and funneled through the international agencies. This is not always possible in the short run for a number of reasons. What remains a sound conclusion, therefore, is that the emerging nation which desires it should by all means be given assistance in population control whether through bilateral or multilateral programs.

The developing nations themselves, sometimes with the prodding of Communist nations, have contended that the United States and other Western nations are promoting population control abroad while ignoring it at home. They conclude from this observation that the United States and the other Western nations are pushing them into population control policies in an effort to maintain Western dominance.

This accusation is ill-founded and inconsistent with the facts. There has been a dramatic increase in the United States in the number of states with birth control clinics supported by public funds. Tax-supported birth control information and services are being provided to low income families at the local governmental level in 39 states. These programs are helping some 200,000 couples with fertility control; meanwhile, Planned Parenthood clinics serve about another 300,000 couples. Nonetheless, an explicit and consistent domestic population policy would place the United States and other Western countries in a better psychological position to persuade and to assist the developing nations. Certainly, until recently, it would have been utterly inconsistent for the United States to support population control abroad when it was impossible even to discuss the question in the halls of government at home. But this situation changed dramatically and for the better with the administration of President John F. Kennedy.

The legislation now being considered by Congress or similar legislation would help to give the United States an explicit domestic population policy completely consistent with its international position, for it would then be clear that the United States also has, and is concerned about, its own population problems. In addition, the proposed legislation would make even more explicit the policy

of the United States in respect to world population problems; it would provide an Assistant Secretary for Population Problems in the State Department for dealing with international population matters and an Assistant Secretary for Health, Medical Services and Population Problems in the Department of Health, Education and Welfare to deal largely with domestic population problems.

Effectiveness of present efforts

There is, finally, the question of how effective are present efforts to reduce the birth rate in the developing areas and what, if anything, can be done to accelerate population control.

Although the economically advanced areas are approaching adequate population control, the newly developing nations of the world are not yet in sight of it. While death rates in Asia, Latin America and Africa are declining much more rapidly than they ever did in the economically advanced areas, birth rates, as has been indicated, are still at their traditional high levels. Some decreases in birth rates are evident in the areas which are experiencing rapid economic and social change, such as Taiwan, Hong Kong, Singapore and South Korea, but such areas are few and their populations constitute but a small fraction of the population in the developing areas, which constitutes two-thirds of the world's total.

It is not at all clear yet that the developing areas can manage to control their population growth during the remainder of this century. The results of experiments to induce birth control among populations which are illiterate and poor have been disheartening. They do not indicate that nations such as India and Communist China can be expected greatly to reduce their birth rates in the near future. There are three reasons for this outlook:

First, illiteracy, poverty, traditional social organization and resistance to change operate as tremendous barriers to the adoption of family planning methods, although evidence from opinion polls shows that more and more women desire information on methods of family planning.

Second, the social sciences have not achieved sufficient knowledge and know-how to break the "cake of custom" and to evoke sufficient motivation and incentive among such populations to practice family planning.

Third, the bio-medical sciences have much to learn about the physiology of human reproduction, and they are only beginning to discover methods of conception control that are acceptable enough, cheap enough and effective enough to meet the problem in the developing areas.

The picture has its encouraging side, however. Never before have so many nations as a matter of national policy adopted family planning programs to control population growth. Never before has so much been done in the fields of bio-medical and social science research to obtain better knowledge to achieve fertility control. Moreover, the breakthrough in new methods represented by the oral progestins and the intrauterine devices (including the "loop") hold forth great promise of even greater breakthroughs.

These developments, in fact, have led some demographers to become quite optimistic about the possibility of reducing fertility among the mass population in the developing nations.

The great challenge

It has been noted that there is no example in modern history of a people who, having achieved education and a higher level of living, did not reduce its birth rate. Unfortunately the converse of this proposition is also true. It is yet to be demonstrated that a nation steeped in illiteracy and poverty can control its birth rate. This dismal fact constitutes the greatest challenge that has ever faced the bio-medical and social sciences and policy-makers and administrators throughout the world. For failure to meet the challenge of excessive population growth holds forth the prospect of unprecedented misery for much, if not all, of mankind.

There is still a question as to whether world population control is possible. For the economically advanced areas the answer appears to be Yes, for they need to do only a little more of what they are already doing. For the developing nations, which now contain two-thirds of the world's population and by the century's end may have three-fourths, the answer is as yet, "We do not know." But there is one thing we do know. We cannot afford not to exert every possible effort to help the developing nations to control their birth rates. Fortunately, this has now become the policy of the United States government and also of the UN and WHO.

The great majority of the world's people do not yet recognize the import of present population trends. The American people are just beginning to grasp

the need of facing up to it. The time has come for the United States to follow through on its recently adopted official policies and wisely to use its great powers and resources to help solve the population problem.

TALKING IT OVER

In this discussion guide you will find discussion questions and reading references. These are suggestions only—a starting point to help you plan a study-group program or a classroom teaching unit.

For further suggestions or for assistance in organizing a discussion series or study project, write to Foreign Policy Association, 345 East 46th Street, New York, New York 10017.

DISCUSSION QUESTIONS

Why do the student of population and the demographer use the expression, "the population explosion"?

In the long run what factor sets the limit to world population growth?

What is the prospect for world population growth in the second half as compared with the first half of this century?

What is the prospect for world population growth in the less-developed areas as contrasted with that for the economically advanced areas during the remainder of this century?

What are the prospects, until the end of the century, for population growth in the areas north of the Tropic of Cancer as compared with areas to the south?

In what ways do population factors impede economic development?

What is the outlook for food supplies for the world's population?

In what ways may population growth during the remainder of this century affect the outcome of the cold war or threaten world peace? Why?

What are the present positions of the Roman Catholic Church and the Communist nations on fertility control?

What is the present policy of the United States in respect to world and domestic population problems? What do you think the United States should do next on world and domestic population matters?

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Senator GRUENING. I also direct that at this point a letter from Dr. Raymond I. Holden, chairman of the Committee on Human Reproduction for the American Medical Association be included in this hearing record. To follow this I direct the inclusion of material basic to the physician's professional role in problems of human reproduction in the undergraduate medical curriculum, my letter to Dr. Holden, "The Control of Fertility," written by the Committee on Human Reproduction, and an article "Medical Backing for Birth Control Grows" by James C. Spaulding from the Milwaukee Journal.

(The material referred to above follows:)

EXHIBIT 19

OCTOBER 22, 1965.

DR. RAYMOND T. HOLDEN,
Chairman, Committee on Human Reproduction,
American Medical Association, Washington, D.C.

DEAR DR. HOLDEN: I have just read a news story which appeared in the October 9 issue of the *Milwaukee (Wisconsin) Journal* entitled "Medical Backing for Birth Control Grows". A copy is enclosed for your information.

Because you are chairman of the American Medical Association's Committee on Human Reproduction, I am pleased to learn that you share my belief that the teaching of birth control methods in medical schools is insufficient and inadequate and all too often outmoded.

These problems have been discussed during the course of hearings on S. 1676, my bill to coordinate and disseminate birth control information upon request. The Subcommittee on Foreign Aid Expenditures, of which I am chairman, has been holding these hearings. It would be extremely helpful to the Subcommittee if you could provide information in this area. The Subcommittee would like to know what the American Medical Association proposes to do to remedy a deplorable problem. Enclosed for your information is a copy of S. 1676 and related materials.

With best wishes, I am
Cordially yours,

ERNEST GRUENING,
U.S. Senator.

EXHIBIT 20

AMERICAN MEDICAL ASSOCIATION,
Chicago, Ill., November 10, 1965.

HON. ERNEST GRUENING,
U.S. Senate,
Washington, D.C.

DEAR SENATOR GRUENING: I have delayed answering your letter of October 22, 1965 until after the meeting of the Committee on Human Reproduction which was held only last week.

The American Medical Association shares your belief that medical schools and postgraduate medical education programs should provide adequate instruction so that physicians will be prepared to assume their rightful responsibilities in the area of population control. Hence, I believe you would be interested in the following new AMA policies and their implementation by the Committee on Human Reproduction.

AMA POLICY ON HUMAN REPRODUCTION, INCLUDING POPULATION CONTROL

1. An intelligent recognition of the problems that relate to human reproduction, including the need for population control, is more than a matter of responsible parenthood; it is a matter of responsible medical practice.
2. The medical profession should accept a major responsibility in matters related to human reproduction as they affect the total population and the individual family.
3. In discharging this responsibility physicians must be prepared to provide counsel and guidance when the needs of their patients require it or refer the patients to appropriate persons.
4. The AMA shall take the responsibility for disseminating information to physicians on all phases of human reproduction, including sexual behavior, by whatever means are appropriate.

AMA POLICY ON DISSEMINATION OF BIRTH CONTROL INFORMATION AT TAX SUPPORTED INSTITUTIONS

The prescription of child-spacing measures should be made available to all patients who require them, consistent with their creed and mores, whether they obtain their medical care through private physicians or tax or community-supported health services.

AMA POLICY ON TEACHING OF HUMAN REPRODUCTION IN MEDICAL SCHOOLS

Coordinated teaching programs are not included in the curricula of many medical schools. Emphasis should be given to teaching in medical schools the total subject of reproduction, including sexual behavior.

To implement this action, the Committee on Human Reproduction prepared a suggested teaching guide indicating how the many facets of this subject could be integrated into the present four-year medical school curriculum. This was sent by the Council on Medical Education to the deans and department chairman of all medical schools. A copy is attached.

AMA Monograph on Reproductive Control.—As authorized by the AMA House of Delegates the Committee on Human Reproduction has prepared a monograph describing all aspects and methods of fertility control (drugs, chemicals, devices, rhythm). This was published in the October 25, 1965 issue of the Journal of the American Medical Association and will, in addition, be made available to medical students. A copy is attached.

I appreciate your expression of interest in the program of the Committee on Human Reproduction.

Sincerely yours,

RAYMOND T. HOLDEN, M.D., *Chairman.*

EXHIBIT 21

INCLUSION OF MATERIAL BASIC TO THE PHYSICIAN'S PROFESSIONAL ROLE IN PROBLEMS OF HUMAN REPRODUCTION IN THE UNDERGRADUATE MEDICAL CURRICULUM

The Committee on Human Reproduction of the A.M.A. regards the physician as a central person in dealing with individual and community problems inherent in the phenomenon of human reproduction. Certainly the physician's role in society is greater than the limited one of dealing with disease and death. Life and life giving processes are in his domain. Evidence suggests that the basic biologic and psychologic drives and processes leading to reproduction of the species are associated with as much or more physical and mental disease than the similar basic processes associated with hunger and nutrition. That physicians are extensively involved in minimizing the risk of pregnancy and delivery to both the

mother and child is obvious. The Committee believes that, within the framework of the physician's personal beliefs, he should be equally prepared to deal with the problems of family planning, sexual behavior (normal and abnormal), and a whole range of related family centered problems. Since population size and control are apt to be considered increasingly at the community level, the physician should be prepared to become a major resource to the community as a counsellor. Inasmuch as the profession will surely be called upon in such a capacity, ability to meet this challenge will result in either progressive leadership, if successful, or a loss of role, if a failure. (Similarly, the profession is at least being given an opportunity to respond to a need in the field of family counselling, marriage counselling, and the areas of sexual behavior. Here the future also will depend on performance. It is the Committee's belief that these are such important areas that the medical schools should be concerned that the pertinent subject matter is available to the student at the undergraduate level. In areas in which attitudes are as heavily influenced by emotions as these, more than the average learning experiences should be offered to give maximum objectivity and completeness. To understand the complete picture, the student should have much insight into the family as a health unit, including the social and economic impact on the health and welfare of children as well as other ecologic factors in order to appreciate his future role as a community resource person. With this in mind, the following suggestions are made as representative of the type of background needed.

AVAILABLE OPPORTUNITIES—BASIC CURRICULUM IN ALL SCHOOLS

A. Pre-medical

Encourage backgrounds in demography, anthropology, child development, psychology, (particularly educational psychology), sociology, ecology, nutrition and food supply, family living, economics and mathematical basis for statistics which are basic to social sciences.

B. Basic Sciences

1. Anatomy

Genetic-Developmental approach is being used in some schools. It offers many opportunities but in any course emphasis could be put on the following:

a. The gonads, particularly the development of the ovum and sperm and the environmental forces that influence the individual and collective germ plasma. Introduction to negative and positive eugenics. Emphasis on age of mother and possible influence of age of ovum following ovulation. Scientific basis for genetic counsellings.

b. Gross and histologic anatomy of the genitalia and implications for function. Other secondary sex characteristics handled similarly.

c. Developmental problems including those of the genitalia, intersex, etc.

d. Neuro-anatomy. Tracts and centers involved in reproduction function. Coordinate with endocrinology and neurophysiology in emphasis on the integrated system and sex function as a normal healthy phenomenon.

2. Biochemistry

a. Chemistry of reproduction: gene control, chemistry of fertilization, genital chemistry and of the secondary sex characteristics. Hormonal functions in chemical terms coordinate with physiology. Chemical aspects of pregnancy.

b. Chemistry of function of nervous system: sensory nerve endings, local and central excitatory states. Coordinate with physiology. Chemistry of memory, automicity, etc., as they may relate to integrated function in 1 d above.

c. Comparative chemistry of sexual function cycles in various species.

d. Chemistry of embryogenesis. Chemistry of genetic and congenital diseases.

e. Chemical basis for nutritional requirements.

3. Physiology

a. Neurophysiology of sexual function and endocrinology of sexual function in both sexes. Integrated systems see Anatomy 1 d.

b. Neurophysiology and endocrinology of pregnancy. General physiological changes in pregnancy.

c. Nutritional deficiencies and function. Mechanism of action of nutrients.

4. Pathology

a. Effect of diseases on pregnancy and fertility and effect of pregnancy on diseases.

b. Pathologic sequences unique to pregnancy.

c. Pathologic sequences unique to sexual function and secondary sexual characteristics.

d. Fetal and newborn pathology.

5. Microbiology

a. Normal flora of genital tract in male and female, pre and post-pubertal.

b. Sexual contact in the transmission of organisms including those causing venereal diseases.

c. Impact of communicable disease control on population growth.

d. Relationship of nutrition and microbial disease.

e. Bacterial genetics and population dynamics.

6. Pharmacology

a. Use of drugs in fertility regulation.

b. Effect of drugs on fertility, genes and embryogenesis as side reactions.

c. Use of physical procedures and devices in fertility regulation.

Two other courses often given in the first two years are psychiatry and some type of preventive medicine (epidemiology, statistics or public health).

7. Psychiatry

a. Emphasize cultural aspects of sexuality and fertility. Integrate sexual development with general mental development.

b. Emphasize effect of family on total emotional and mental development.

c. Psychological effect of ample nutrition in a population.

d. Genetic and developmental factors in mental retardation.

e. Problems of behavior including sexual behavior.

8. Preventive medicine

a. Vital statistics: estimating population growth: impact of various types c control programs on population growth.

b. Epidemiology of positive factors in health, such as fertility, family size, emotional and mental development. Consideration of sexual practices, fertility, family position, emotional growth, genetic effects, etc. as variables in predisposition to disease and total health. Epidemiology of conditions associated with sexual and reproductive functions, abortions, venereal disease, neuroses, etc.

c. Public Health programs in sex education, venereal disease control, mental health, family planning, nutrition, maternal and child health, etc.

d. Organization of Society: quantitative factors in family and community size as related to sources of nutrition and energy.

e. Principles of educational psychology, particularly health education.

C. Clinical Years

In the clinical years teaching has become more and more patient centered. All services should attempt to understand the meaning of family relationships to each patient including (1) the relationship and meaning of family position and function of the patient during childhood, (2) the adult's attitudes toward sexual behavior and as a marriage partner and as a patient, (3) meaning of family size to the patient, (4) type of family control practices used and/or desired, (5) desire for the appropriateness of family planning counselling for eugenic, medical or social reasons, and (6) anxieties, particularly those concerning sexual function and parenthood, precipitated by the present illness.

1. Obstetricians and gynecologists should carry a major load in instruction. Their dual role in modern medicine should be stressed. They are principal consultants to the family physicians in problems of infertility, particularly for diagnosis and correction of the female component. The urologist may participate in the male aspects. In this connection, the department of obstetrics and gynecology should teach normal sexual function, contraception, and problems of infertility, pregnancy wastage, etc. Secondly, the modern obstetrician is a most effective health counsellor and this role should be emphasized. Postnatal clinics are as important as prenatal clinics. Family planning, adoption, preservation of sexual function etc. are all important problems.

2. Pediatrics should stress problems of growth and development, particularly parental inadequacies and how to help them. Important problems are the mean-

ing of neglect, the battered baby syndrome, the role of neglect in mental retardation, genetic diseases and other developmental abnormalities, and teenage problems with emphasis on preparation for parenthood.

3. Medicine should discuss relationship of growth and reproduction to a large number of diseases. Conditions in which sexual intercourse is contraindicated or in which it has a negative influence should be presented with this problem in mind. The meaning of the disease to the patient in terms of the sexual problem it raises should be investigated. The impact of the family situation on the disease and vice versa should be explored.

4. Surgery should have the same general consideration as medicine. Urology should serve as the principal area to teach about male sexual function, infertility, etc.

5. Psychiatry in the clinical years should present case material in which family problems, size and intrarelationships have played a major positive or negative role in development. Sexuality in social and individual psychopathology should be taught. The department of psychiatry has a potentially large and unique function in helping the student understand his own psychosexual attitude and help solve problems he may have in this area.

6. Preventive medicine in the clinical years should emphasize the social factors related to such problems as abortion, complications of pregnancy, family size as a socioeconomic factor in disease, family planning as a disease control measure. Normal sexual function and healthy child rearing and family practices should be discussed. Periodic examinations should be accompanied by appropriate counselling in areas where behavior patterns appear unfavorable to health.

D. New Programs

Besides these opportunities to integrate material in almost any curriculum, there are courses in some schools which ideally lead to the opportunity for more training in new areas.

a. A well run growth and development course, particularly if a newborn is assigned to each student in the first year, gives maximum potential for estimating the impact the child has had on the parents and siblings and vice versa. The whole problem of family position and development can also be emphasized.

b. A good statistics course including vital statistics would allow the development of much demographic information. Similarly, a course in epidemiology of conditions of health would allow development of much meaningful material as to sexual behavior, family relationships, etc.

c. Any kind of intradisciplinary program which would allow subjects such as sexual function, conception and embryogenesis to be taken up as units would be very effective.

d. Introduction of the study of culture in the medical school as a basic science would obviously serve some of the same purposes.

e. Special clerkship programs in parent planning clinics, underdeveloped areas, nutritional programs, or demographic problems would also introduce new opportunities.

EXHIBIT 22

THE CONTROL OF FERTILITY

(By the Committee on Human Reproduction,* AMA, Oct. 25, 1965, Vol. 194, No. 4.)

In 1964 the Board of Trustees of the American Medical Association appointed a Committee on Human Reproduction with the charge that it "review the earlier statements of the AMA on contraceptive practices and prepare, for review by the Board, statements on this and other aspects of human reproduction." The last established policy statement relative to contraceptive practices had been made by the Association in 1938.

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*This report has been adopted by the Commlttee on Human Reproduction of the American Medical Association. The members are Raymond T. Holden, M.D., Chairman, Washington, D.C.; C. Lee Buxton, M.D., New Haven, Conn.; Mary S. Calderone, M.D., New York; Janet T. Dingle, M.D., Cleveland; George M. Fister, M.D., Ogden, Utah; H. Close Hesseltine, M.D., Chicago; Henry D. Lederer, M.D., Richmond, Va.; and Mark H. Lepper, M.D., Chicago.—John C. Ballin, Ph. D., Secretary.

The Committee made recommendations to the Board which were subsequently approved by the House of Delegates as the policy of the AMA in the matter of population control as follows:

1. An intelligent recognition of the problems that relate to human reproduction, including the need for population control, is more than a matter of responsible parenthood; it is a matter of responsible medical practice.

2. The medical profession should accept a major responsibility in matters related to human reproduction as they affect the total population and the individual family.

3. In discharging this responsibility, physicians must be prepared to provide counsel and guidance when the needs of their patients require it or refer the patients to appropriate persons.

4. The AMA will take the responsibility for disseminating information to physicians on all phases of human reproduction, including sexual behavior, by whatever means are appropriate.

In accordance with the directive of the House of Delegates in 1937 that the AMA "undertake the investigation of materials, devices, and methods recommended or employed for the prevention of conception with a view of determining physiologic, chemical, and biologic properties and effects and that the results of such investigations be published for the benefit of the medical profession," the Council on Drugs has for many years included a chapter on contraceptives in its annual publication, *New and Nonofficial Drugs*. Because of changes in the scope and mission of this publication, now designated *New Drugs*, the chapter on contraceptives was omitted from the 1965 edition.

The Committee on Human Reproduction, believing that such information should continue to be readily available to physicians, has prepared, with the authorization of the Board of Trustees, this monograph for distribution to physicians. It is hoped that this publication will help to implement another new policy of the AMA; namely, that

"the prescription of child-spacing measures should be available to all patients who require them, consistent with their creed and mores, whether they obtain their medical care through private physicians or tax or community-supported health services."

GENERAL CONSIDERATIONS

The need for control of population, whether in nations or in individual families, is now recognized on a world-wide basis, and research is being intensified to develop methods that will not only be effective, but will meet the widely varying needs of individuals according to their religious beliefs, cultural mores, socioeconomic backgrounds, and intellectual and emotional motivations.

As medical art, contraception is no more simple than any other—indeed it has complexities entirely peculiar to itself. For one thing, it does not protect against illness or death (except perhaps in extreme cases), but against a quite normal physiological process. But failure of the physician to provide it or of the couple to avail themselves of it may result in the birth of a child under circumstances detrimental to it, to its family, or to the society to which the family belongs.

Furthermore, all but two of the medically accepted contraceptive measures (hormonal control of ovulation and intrauterine devices) involve direct or indirect interference with the sexual act, a characteristic that inevitably arouses resistance to their use. Finally, the concept that a child can be detrimental to the family welfare is foreign to many cultures and abhorrent to others, as is the notion that it is possible or even desirable to attempt a modification of anything so private and personal as the sex life of a couple. For all of these, as well as for religious reasons, it has taken American medicine a goodly number of years to accept contraception as an integral part of medical practice.

INDICATIONS AND CONTRAINDICATIONS

Contraception may be used in three ways: to postpone first pregnancy, to space between pregnancies, and to avoid pregnancy altogether. In almost every marriage (even when the couple strongly desires children), it is generally advisable to postpone pregnancy for at least a few months until some of the basic adjustments have been made. In youthful (teenage) marriages, postponement of first pregnancy is especially wise, since such marriages have been correlated with high rates of divorce; i.e., the earlier the occurrence of pregnancy in the marriage, the higher the divorce rate. When the couple is over 20 years of age,

postponement of first pregnancy should usually not exceed a period of two years in order that a preexisting but unidentified infertility problem may be unmasked while the couple still has youth on its side. When the wife is over 30, postponement of a desired pregnancy for more than a few months is contraindicated because of decreasing fertility in women with increasing age.

EFFECTIVENESS

The most frequently asked question about contraception is, "What is the best method?" The only answer that can be given at present is that there is no such thing as a single best method, although in the foreseeable future a method might well be developed that would fulfill not only the three principal criteria—safety, effectiveness, and acceptability—but also the highly desirable ones of cheapness and feasibility of application without medical supervision. Such a method would be particularly desirable if the benefits of family planning are to be made available to those parts of the world where physicians are a rarity and where contraceptive advice and direction is left to other authorities. Because there is no single "best" method, it is important for the physician to understand fully the pros and cons of all the methods presently available, and especially the importance of the relative acceptability of each method.

It should be remembered that safety and effectiveness of contraceptive products are evaluated during the process by which a product and its labeling receive clearance *for contraceptive use* by the U.S. Food and Drug Administration (FDA). Safety must always be demonstrated before a new drug application can be made, and effectiveness is evaluated by the FDA on the basis of field trials carried on and reported by the manufacturers. Effectiveness is reported in statistical terms as the number of pregnancies per 100 woman-years of use or, more recently, as cumulative rates (on the principle of the life table). These, of course, are impersonal figures, and although the physician wants to be assured of a high degree of theoretical effectiveness, his main interest should lie in the effectiveness during use by the individual couple *as a biological unit*. Thus, the third criterion, acceptability, becomes of prime importance.

ACCEPTABILITY

In simple terms, acceptability means the degree of consistency with which a couple will actually use the method. Many factors play a role in this, among them the following.

Basic Motivation.—Is the couple merely spacing between births or limiting the family? Are they seeking contraception spontaneously or in response to outside pressures (family, community, government)? Is their present number of children reasonably small or do they have so many as to sap their initiative and will to do? Is family planning accepted or looked at askance in their peer group and community? Are their social mores such that the man or woman customarily assumes responsibility for family matters?

Sexual Attitudes of the Couple.—Studies among working class couples have shown that success in family planning is apparently a function of satisfactory sexual relations, which, in turn, tends to be a function of the kind of sex education the couple received in youth. The ability of one or both of a couple to verbalize as to the status of their sexual relations may be helpful to the physician in assessing their capacity to carry out a contraceptive measure persistently and, hence, successfully. The converse may also be true: overemphasis on difficulties with some aspect of contraceptive practice, such as resistance to "messiness" of chemicals or to the manipulation necessary for inserting a diaphragm, may be an unconscious cover-up for sexual maladjustment.

Neurotic Interaction of the Couple.—No matter how sound the couple and their relationship, the fact remains that most individuals have at one time or another in their lives some neurotic attitudes, and in marriage it is common to observe the interplay of these attitudes either in conflict or very often in mutual satisfaction of each other's neurotic needs. It can happen, therefore, that the neurotic needs of a couple that on the surface seems highly motivated may in fact result in partial or total inability to practice contraception. With such couples, motivation is therefore at the intellectual or conscious level, with the subconscious or emotional level causing forgetfulness, loss of contraceptive supplies, or rationalizations as to why the method is unsuitable, dangerous, or disagreeable.

Socioeconomic Level.—The hard facts of lack of privacy and sanitary facilities can play havoc with the ability of the most highly motivated couple to use some

methods. Lack of education also plays a role, but this is probably associated with socioeconomic factors rather than with any lack of intelligence, for the relatively complex method of oral contraception has been proved to be highly acceptable and successful among welfare patients of very low socioeconomic and educational status who rejected or failed with all previous methods.

CHOICE OF METHOD

In guiding couples toward the choice of a method suitable for their special needs, the physician must apply his medical skill and judgment in a delicate balance between his own health goals for the couple and their family and their goals for themselves. He will be conscious of the need to maintain the quality of parentage and of the advantages of family life free from strain and harassment. He may prescribe any one of the several temporary methods in keeping with the couple's attitude and acceptance or, when such a course appears suitable, he may suggest permanent interruption of childbearing through surgical sterilization of one of them.

NONSURGICAL CONTRACEPTIVE METHODS

In descending order of theoretical effectiveness are (1) oral hormonal control; (2) intrauterine devices (IUD), (3) mechanical devices; (4) foams; (5) creams and jels used alone, rhythm, and coitus interruptus; (6) other chemical methods.

Oral Hormonal Contraceptives.—The suppression of ovulation by the oral administration of progestogens, notably 19-nor-steroids either alone or in combination with ethinyl estradiol or the 3-methyl ether of the latter, has been under study since 1954. The literature on the subject has grown voluminous, and at present seven products in various dosage forms have received clearance from the U.S. Food and Drug Administration for use as contraceptive agents (Table 1). Of these, five are "combination" products of estrogen-progestogen mixtures which are taken throughout the entire treatment period; the other two are "sequential" products in which estrogen alone is taken for 15 to 16 days followed by five to six days of combined estrogen-progestogen medication. Their method of administration is similar:

TABLE 1.—*Oral contraceptive products*

ORAL HORMONAL CONTRACEPTIVES (COMBINATION)

Trade name	Composition	Manufacturer
Envoid	9.85 mg. norethynodrel plus 0.15 mg mestranol	G.D. Searle & Co., Chicago.
Do	5 mg. norethynodrel, plus 0.075 mg. mestranol	
Enovid-E	2.5 mg. norethynodrel plus 0.1 mg. mestranol	
Norinyl	2 mg. norethindrone plus 0.1 mg. mestranol	Syntex Laboratories, Inc., Palo Alto, Calif.
Norlestrin	2.5 mg. norethindrone acetate plus 0.05 mg. ethinyl estradiol.	Parke, Davis & Co., Detroit.
Ortho-Novum	10 mg. norethindrone plus 0.06 mg. mestranol	Ortho Pharmaceutical Corp., Raritan, N.J.
Do	2 mg. norethindrone plus 0.1 mg. mestranol	
Provest	10 mg. medroxyprogesterone acetate plus 0.05 mg. ethinyl estradiol.	Upjohn Co., Kalamazoo, Mich.

ORAL HORMONAL CONTRACEPTIVES (SEQUENTIAL)

C-Quens	0.08 mg. mestranol (15 tablets) and 0.08 mg. mestranol plus 2 mg. chlormadinone acetate (5 tablets)	Eli Lilly & Co., Indianapolis.
Oracon	0.1 mg. ethinyl estradiol (16 tablets) 0.1 mg. ethinyl estradiol plus 25 mg. dimethisterone (5 tablets).	Mead Johnson & Co., Evansville, Ind.

"One tablet daily, to be taken at the same time of day for 20 or 21 days of each cycle, beginning with Day Five (counting the first day of bleeding as Day One). Regularity of dosage is essential. Any omission will reflect itself in increased rates of pregnancy or of breakthrough bleeding. The patient should be instructed that if she forgets to take her daily dose, she should take it as soon as she remembers it, even if this means taking it at the same time as the next following dose.

With omission of a tablet for more than one day, she should be advised to finish out the remaining tablets but at the same time to use one of the more effective local contraceptive methods for the remainder of that cycle. If oral contraception is initiated in the middle of menstrual cycle or in women with a history of irregular or short cycles, another method should also be used for the remainder of that first cycle. Patients should be warned to begin a new treatment cycle one week after their last tablet in cases of amenorrhea or failure of withdrawal flow."

The chief side-effects of oral hormonal contraceptives are spotting and breakthrough bleeding, nausea and vomiting, breast tenderness, and weight gain, but these usually diminish with successive cycles and can be minimized by adjustment of dosage or shift in products. Breakthrough bleeding can occur in as many as 25% to 30% of first cycles, usually diminishing in succeeding cycles. Some progestogen-estrogen combinations are claimed to be associated with a lower incidence of breakthrough bleeding than others, but there is also some evidence to suggest that these compounds are also associated with a higher incident of amenorrhea or failure of withdrawal flow. The advantages of having several products available to choose from are obvious, offering opportunity to shift both dosage and product until the one best suited to the patient's physiological makeup is found. In any case, careful reading of labeling material is advised, because of the variation of proportions between progestogen and estrogen, and to treat breakthrough bleeding by simply giving two tablets may, while doubling the dose of progestogen, markedly overincrease the proportion of estrogen. If breakthrough bleeding persists, further investigation as to other causative factors is indicated so that coexistent pathology will not be overlooked.

The mechanism of action of hormonal contraception is through pituitary depression with failure of production of follicle-stimulating hormone (FSH) and luteinizing hormone (LH), thereby suppressing ovulation. The associated production of a hostile cervical mucus or acceleration of endometrial changes may also be antifertility factors. Because hormonal stimulation to growth of already existing fibromyomata may occur, a thorough gynecologic examination should be done as a routine before the initiation of treatment and again at six months. Vaginal and cervical cytology should also be obtained as part of the initial examination and repeated at least annually. To date, no increase in the incidence of malignant transformations has been reported in those women who were found to be free of pelvic cancer prior to taking the oral contraceptives.

The possible association of thromboembolic phenomena with the use of oral contraceptives has been reviewed by several committees, including one appointed by the FDA. None of these has found any significant correlation between the occurrence of thrombophlebitis and the use of norethynodrel with mestranol, which at the time of the investigations, was the only preparation cleared by the FDA and therefore under question. However, in order to allow for the unlikely occurrence of thromboembolic episodes, it has been suggested that women with previous vascular problems, varicose veins, or other factors which may predispose to thrombophlebitis should be watched carefully for any signs of thromboembolic problems or given another method. It should be pointed out that thrombophlebitis in the absence of endocrine therapy does occur in women within the reproductive age group.

Changes in liver function and cholestatic jaundice have occurred in women taking oral contraceptives. For this reason, the drugs are contraindicated in patients with either a reliable history or presence of hepatic disease or dysfunction. Likewise, the presence or history of breast or genital cancer are considered absolute contraindications to hormonal contraception.

There has been no evidence to support the belief that hormonal contraception has an adverse effect on menopause. On the contrary, an increasing number of gynecologists are finding these drugs helpful and recommending their use for the regularization of the irregular menopausal cycle and the control of menopausal symptoms. For this purpose, administration is recommended for one year, followed by discontinuation for several months to see if spontaneous menstruation occurs. During this trial period a local method of contraception should be employed to minimize the possibility of a menopausal pregnancy.

Because of concern about possible long-term adverse effects of the oral hormonal contraceptive, the FDA presently limits administration from 1½ to 4 years depending on the drug and the duration of experience with its use. Continuing studies of several large groups of women have been in progress for over ten years, however, and no evidence of long-term adverse effects has been shown.

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It is already clear that the use of this method of contraception has no effect on future fertility after its discontinuance. Indeed, there is some evidence that discontinuation of the oral contraceptive is followed by a period of enhanced fertility, presumably because of a "rebound" phenomenon.

The effectiveness of the oral contraceptives is virtually 100%, certainly the highest of any method short of surgical sterilization or total abstinence. The method has high acceptability, markedly so with population groups which have resisted or found unacceptable the local methods of conception control.

Intrauterine Devices.—The IUDs are still considered to be in the trial stage. However, the scope of the clinical trials to date is so extensive and the reporting and statistical analysis of these trials is of such high caliber, that the assumption of the imminent broad-scale use of the IUDs as a feasible and relatively safe method of contraception seems to be warranted. Since recrudescence of interest in these devices in 1959, two international conferences on their use have been held, and a cooperative statistical study has reported the results on effectiveness, acceptability, and side-effects in 11,222 women. After 85,782 months of use, 187 pregnancies were reported after insertion of an IUD and prior to an expulsion noticed by the wearer or before the removal of the device. Additional reports from many other parts of the world include thousands of women. Present studies concern themselves with refinements of size and design of the devices to enhance their effectiveness and reduce the incidence of such side effects as expulsion, metrorrhagia, menorrhagia, and pain. Four major design modifications are presently in use in this country, developed concurrently by different investigators: the Margulies spiral, made of polyethylene; the Lippes loop, a double S of polyethylene; the Birnberg bow, also of polyethylene; and the Hall stainless steel ring (Table 2). These are shown in the Figure. The latter two are entirely intrauterine. The first two include a short appendage which allows the woman to feel for the continued presence of the device.

At present the mode of action of the IUDs is not clear. Endometrial changes associated with the presence of the device appear to be limited to increased edema and vascularity, with no evidence of preclinical abortion. Sperm migration is normal. Possible changes in uterine and tubal motility have been suggested. The lower than expected incidence of tubal implantation in such pregnancies as have occurred is suggestive of a mechanism that involves more than the uterine environment.

In their present forms the IUDs are considered to be suitable for the parous but not the nulliparous woman. Thus, for most patients, insertion is accomplished without dilatation. Insertion toward the end of a menstrual period is advised to avoid interference with a possibly preexisting pregnancy. Furthermore, introduction is easier at this time because of cervical changes, and post-insertion spotting, which is fairly common, is more readily accepted by the patient merely as a prolongation of the normal period. Studies on early post-partum insertion are promising. Each device has its own specially designed inserter.

Selection of patients is important: those with active pelvic infection or with a history of repeated pelvic inflammatory disease should be excluded. Fibro-

TABLE 2.—*Mechanical Contraceptive Products*

	Manufacturer
Intrauterine Device:	
Birnberg bow	Marco and Son, Old Bridge, N.J.
Hall-Stone stainless steel ring	Goshen Instrument Corp, Goshen, N.Y. Glaxo-Allenbury's Canada, Ltd., Weston, Ontario, Canada.
Lippes loop	Hohabe, Inc., Buffalo.
Margulies spiral (Gynecoil)	Ortho Pharmaceutical Corp., Raritan, N.J.
Diaphragm:* Most of the firms listed as manufacturers of contraceptive jellies and creams also manufacture various types of diaphragms suitable for the varying needs of individual patients.	
	Manufacturer
Cervical Cap	Durex Products, Inc., New York. Milex Products, Chicago.
Condom: Quality control is checked by the US Food and Drug Administration; therefore, most brands bought at drug stores are generally acceptable.	

*To be used with contraceptive jelly or cream.

myomas which might distort the uterine cavity are also a contraindication, as is any abnormal bleeding which should be investigated and corrected before insertion.

The actual insertion of an IUD is not difficult, but since it usually involves sounding of the uterus and determination of uterine position, it is desirable that this procedure be done by those with some training or experience in gynecology. Directions for insertion and removal are available with each type of device. Those with cervical extensions are easily removed by the patient herself. Studies done after removal of the device have shown that conceptions follow at the expected rate of approximately 87% in one year.

Difficulties can be expected with the IUDs, but they are no uncontrollable. Explusion occurs most frequently during early months of use, and when unnoticed, as is the case in about 20% of all expulsions, the pregnancy rate is naturally increased. The rate of spontaneous ejection varies according to the type and size of the device. In the pooled statistics so far reported, expulsion rates have been as follows: spiral, 21.8%; loop, 9.3%; bow, 1.1%; and ring, 15.8%. Reinsertion after first expulsion should always be tried, since in many women there will be success with the same or a different device on a second or third trial.

Bleeding after insertion is almost to be expected but rarely necessitates removal. Pain of a crampy nature is also a frequent initial side effect but is usually not severe enough to require removal of the device. In the pooled statistics currently available, approximately 5% to 10% of devices were removed because of bleeding or cramping or both. However, some women with dysmenorrhea may report considerable and permanent relief.

The effectiveness of the IUDs, in the pooled statistics reported to date varies. The cumulative pregnancy rate after one year per 100 insertions ranges from 1.8 for the spiral to 7.5 for the ring, with an overall rate of 2.6 for the over 10,000 women now under cooperative study. The acceptability of the IUDs ranks very high, if the woman can wear it without difficulty. Its most obvious advantages are cheapness, elimination of all connection with the sexual act, and especially elimination of need for any responsibility by the wearer except to verify its continued presence. The rare cases in which a husband complains of sensation from the cervical segment of the device can be corrected by replacing it with one that is entirely intra-uterine. There is no reason to believe that the device cannot remain in place indefinitely or as long as conception control is needed. It should be removed after menopause. Where occassionally a pregnancy is superimposed on the use of the device, procedure to term with the device in place usually follows, with normal birth and a normal child.

It can be concluded that the intrauterine devices constitute a method of conception control that is highly effective, immediately reversible, and essentially safe. It is expected that the frequency of problems associated with their use will decrease with changes in their design and possibly in their constituent materials.

Local Methods.—There are designed to interpose a barrier between sperm and the cervical os. The barrier may be entirely mechanical (condom), mechanical plus chemical (diaphragm or cervical cap plus spermicidal cream or jelly) or chemical (foams, creams, and jels used alone, foam tablets, suppositories, foam and sponge). All of these methods vary rather widely, not only in theoretical effectiveness, but in their use effectiveness because of the wide range of their acceptability.

Condom.—The sheath or cover for the penis worn during coitus is undoubtedly still the most widely used artificial contraceptive method, not only in the United States but throughout the world. Its use is far more often self-sought than obtained through medical sources, except when the latter promotes its use for the control of venereal diseases. In effectiveness it ranks with the diaphragm and cervical cap over other local methods, but although it costs little and is widely available, its greatest use is most probably outside of marriage. There is considerable feeling by both sexes that it interferes with full sexual sensation; nevertheless, because of its easy availability all couples should be aware of its reliability for use when another method for some reason is not available. Reliability is further enhanced when use of the condom is combined with the use of jelly, cream, or foam by the woman.

Diaphragm or Cervical Cap With Chemical.—Both of these methods have interesting historical backgrounds, because for obvious reasons the medical pro-

fession has always had to be involved with their development and prescription. The cervical cap has never been much used in the United States; it has, however, enjoyed considerable popularity in Germany and Great Britain.

By contrast, the diaphragm plus a chemical has until fairly recently been the most popular method of contraception in the United States—popular, that is, with physicians and with the relatively elite group to which it was available and that could use it. There is no question as to the reliability of the diaphragm when it is used consistently by women who have been taught to check for correct placement after its insertion and to leave it in place for a minimum of six hours after coitus without douching. There is also no question as to its relative nonacceptability, particularly with people of low socioeconomic or educational status. Diaphragms with modifications in the spring rim which give an arc configuration are available and these sometimes make insertion easier and make the method more foolproof. Although the usage of the diaphragm is expected to continue to decrease as the newer, more effective, and more acceptable methods develop in scope and variety, it should be remembered as an ideal interim or alternate method, or for occasional use—ideal, that is, for those of high motivation and the background to use it.

It is important to realize that the creams or jellies that are to be used with the daphragm or the cervical cap are not those that have been designed to be used alone.

Chemicals Used Alone.—The FDA has up to the present cleared for contraceptive use without any mechanical devise, two foams, ten creams or jels, two foaming tablets, and one suppository (Table 3). These products do not require the prescription of a physician. That they vary greatly in their invitro spermicidal activity has been determined by actual tests. It has not, however, been possible to establish what the relationship is between this variation in vitro activity and their effectiveness under clinical conditions of use. The fact that the development of the vaginal foams coincided approximately with the advent of the first oral contraceptive and the developing contraceptive sophistication of both the medical profession and the public made it extremely difficult, if not impossible, to find groups willing to risk pregnancy in double-blind tests of vaginal products that would be large enough to yield statistically significant results. Such studies as have been made, some as yet unreported, coupled with direct observations of the chemicals on the crevix under conditions of active artificial coitus, have afforded relatively firm grounds for ranking the chemicals used alone in the following descending order of effectiveness:

1. *Foams.* Without question these have the highest acceptability, and in all probability the highest effectiveness, of any of the chemicals used alone. They suffer least from complaints of "messiness" by users and would appear to be a most excellent method to have in reserve—for instance in case of breakage or slipping of a condom.

2. *Creams and jels.* Although some of these products probably equal the foams in effectiveness, they all nevertheless rank lower in acceptability because of postcoital "leakage." The difference in adequacy and maintenance of cervical coverage in the face of active or repeated coitus, as between the creams and the jel types, has been observed and reported. Both are also more expensive than the foams due to the fact that their dosage weight is higher. It is important to encourage women to try several products, as acceptability will partially depend on the amount of natural vaginal lubrication accompanying sexual arousal as well as subjective factors.

3. *Foam tablets, sponge and foam, suppositories.* Most of the evaluative work on these methods is extremely scanty because there has never been a great deal of interest in them nor much belief in their reliability.

Studies involving direct visualization of the vagina and cervix have clearly shown the reasons for the relatively low effectiveness of foam tablets and suppositories; both have characteristics in use that would explain a relatively low acceptability. It is therefore surprising that the suppositories continue to enjoy such wide use. This is undoubtedly because advertising in the popular press of suppositories "for feminine hygiene" has been couched in terms that would lead the unsuspecting reader to believe that they were also effective as spermicides. Although the feminine hygiene products have not been cleared by the FDA for use as contraceptives, many women are unaware of this and confuse them with the one brand of suppository that has received clearance for contraception.

The sponge and foam method is of such a primitive nature by comparison to the far more sophisticated applicator-type chemicals as hardly to appeal

to the average user. It is very cheap, however, as is the foam tablet; these two are probably the cheapest of all of the methods using chemicals alone. Because any method of birth control will exert some depressing effect on birth rate as compared to no method at all, these two methods which are susceptible to distribution by nonmedical personnel in remote and primitive parts of the world might conceivably have a place—at least until such time as more effective and acceptable but equally cheap and easy-to-distribute methods are developed.

TABLE 3.—*Chemical Contraceptive Products**

Vaginal Foams, Creams, and Jellies

Vaginal Foams

Delfen Vaginal Foam,† Ortho Pharmaceutical Corp., Raritan, N.J.
Emko Vaginal Foam,† Emko Co., St. Louis

Creams and Jellies

Delfen Cream,† Ortho Pharmaceutical Corp., Raritan, N.J.

Certane Creme, Vogarell Products Co., Los Angeles
Contra Creme, Research Supplies, Albany, N.Y.

Creemoz Creme, Larré Labs., Division of Gynecic Laboratories, Inc., Yonkers, N.Y.
Lactikol Jelly, Durex Products, Inc., New York
Koromex-A Jelly,† Holland-Rantos Co., Inc., New York

Ortho-Gynol Jelly, Ortho Pharmaceutical Corp., Raritan, N.J.

Koromex-A Jelly, Holland-Rantos Co., Inc., New York
Marvosan Jelly, Veritas Products Co., Inc., Hillside, N.J.
Preceptin Gel,† Ortho Pharmaceutical Corp., Raritan, N.J.
Verithol Jelly, Veritas Products Co., Inc., Hillside, N.J.

Certane Jelly, Vogarell Products Co., Los Angeles
Lactikol Creme, Durex Products, Inc., New York
Ortho Creme, Ortho Pharmaceutical Corp., Raritan, N.J.

Immolin Cream-Jel,† Julius Schmid, Inc., New York
Koromex Cream, Holland-Rantos Co., Inc., New York
Locorol "D" Jelly,† Peck & Sterva Division, Inc., International Labs, Inc., Rochester, N.Y.

Lanesta Gel,† Esta Medical Labs., Inc., New York

Colagyn Jel,† The Smith Laboratory, Inc., Kansas City, Mo.
Lanteen Jelly, Esta Medical Labs, Inc., New York
Ramses Jelly, Julius Schmid, Inc., New York

Bilco Jelly, Veritas Products Co., Inc., Hillside, N.J.
Cooper Creme,† Whittaker Laboratories, Inc., Peekskill, N.Y.
Cooper Creme Gel, Whittaker Laboratories, Inc., Peekskill, N.Y.
Jellak Jelly, Larré Labs., Division of Gynecic Laboratories, Inc., Yonkers, N.Y.
Kemi-Cream, Kemi Products Corp., Clifton, N.J.
Kemi Jelly, Kemi Products Corp., Clifton, N.J.
Locorol Jelly, Peck & Sterba Division, Inc., International Labs., Inc., Rochester, N.Y.
Marvosan Creme, Veritas Products Co., Inc., Hillside, N.J.
Milex Crescent Creme, Milex Products, Chicago
Milex Crescent Jelly, Milex Products, Chicago
Milex Jelly B4,† Milex Products, Chicago
Veritas Kreme,† Veritas Products Co., Inc., Hillside, N.J.

*All of the products listed have been tested for effectiveness against live human sperm. Creams and jellies are listed in descending order of in vitro spermicidal activity. Whenever two or more products have the same in vitro spermicidal activity, they are bracketed and listed alphabetically. Difference in sperm immobilizing ability between neighboring groups in the list is not great, but difference between those at top and those at bottom of the list is considerable. It is not possible to determine what correlation may exist between these in vitro tests and in vivo effectiveness of the products as observed under conditions of clinical use.

†Products advertised or designed for use without mechanical (occlusive) protection.

Vaginal Foaming Tablets (Alphabetical)

Durafoam Tablets,† Durex Products, Inc., New York
Zeptabs,† Larré Labs., Division of Gynecic Laboratories, Inc., Yonkers, N.Y.

Sponge and Foam

Durafoam Liquid with Sponge, Durex Products, Inc., New York
Durex Foam Powder with Sponge, Durex Products, Inc., New York

Vaginal Suppositories

Lorophyn,† Eaton Laboratories, Norwich, N.Y.

Postcoital Douche.—This cannot be dignified as a method of contraception and is mentioned only to be dismissed. In the first place, sperm have been demonstrated postcoitally in the cervix within seconds of ejaculation. Second, its use within six hours after intercourse when other methods such as foams or creams have been utilized for contraception will in all probability interfere with their effectiveness. Finally, if anything should be used following unprotected coitus, it should be one of the foams or creams, not only because they are highly effective but because it takes far less time to load and discharge an applicator with one of them than it does for the woman to get up and go through the ritual of a douche.

Rhythm Method.—This method is based on rhythmic occurrence of fertile and infertile days during the menstrual cycle and on the avoidance of intercourse at the time the woman is most likely to conceive.

Prerequisites.—Several prerequisites must be met to make the method successful: (1) Both partners must agree to forego intercourse at certain times; (2) Accurate records of the length of each menstrual cycle for the preceding 12 cycles must be maintained; (3) Each cycle should be counted from the first day (Day One) of bleeding to the last day before the next menstrual period begins; (4) The couple should be aware, at all times, of which cycle days are considered fertile and where they are in the cycle.

Determination of the Fertile Time.—It is generally agreed that ovulation occurs about 12 to 16 days before the next period and an allowance of one day's life span for the ovum must be made at the end of the fertile period. Sperm is probably capable of fertilizing an ovium for at least 48 hours and allowance must be made for this at the beginning of the fertile period.

Remembering these facts together with the knowledge that the length of the cycles vary, the safe and fertile times may be calculated from a formula as follows: The shortest cycle minus 19 days equals the safe days from Day One of the cycle. The longest cycle minus ten days marks the beginning of the safe days at the end of the cycle. For example, if the cycles vary from 28 to 33 days, then 28 minus 19 equals 9, which means that Days One to Nine are safe, and 33 minus 10 equals 23, which means that Days 23 up to the next period are safe. Thus, Days 10 through 22 are fertile.

Basal Temperature Method.—This is a refinement of the rhythm method and is based on the fact that progesterone is produced starting near the time of ovulation and that circulating progesterone raises the basal body temperature. The safe and fertile times are determined as follows:

"Daily temperatures are taken in the basal state, i.e., before rising each day prior to any activity and at approximately the same time daily. Temperatures may be taken either orally, vaginally, or rectally provided the same method is used throughout the cycle. A rise of 0.5 F (approximately 0.3 C) indicates that ovulation has occurred. After the temperature rise has been sustained for three days, it is then safe to have intercourse until the next period begins. It is also necessary to refrain from intercourse for a safe time *before* ovulation (at least 48 hours). As previously stated, this may be determined by subtracting 19 days from the length of the shortest cycle of the preceding 12 cycles. If the shortest cycle is 27 days, then 27 minus 19 equals 8; therefore Days One to Eight are considered safe. The patient shall abstain from intercourse from Day Nine until the basal temperature has risen 0.5 F and the rise has been sustained for three consecutive days."

†Products advertised or designed for use without mechanical (occlusive) protection.

Reliability of the Rhythm Method.—This will depend to a large extent on the motivation and dedication of the couple using it. The more chances taken, the greater the likelihood of pregnancy.

The most reliable variation of the rhythm method is the use of the basal temperature method with intercourse limited to the interval *after* the rise in temperature. The failure rate with this is 5/100 years, whereas with intercourse prior to the temperature rise the failure rate is 9/100 years. If the temperatures are not taken and the calendar method alone is used, the failure rate is 15/100 years, or three times as high.

Coitus Interruptus.—This method is of genuine historical interest, for until the popularization of the condom and other methods, it served certain countries of western Europe very well, as attested to by their low birth rates. Ireland is probably the only country whose low rate of population increase is not the result of use of this method but rather of late or nonmarriage or emigration.

Coitus interruptus is also fairly widely used in the United States. Objective consideration of it as a method would seem to indicate that if it is practiced in such a way that both husband and wife obtain full satisfaction and find it acceptable, there is no reason to try to change them to another method except on the grounds of relative effectiveness. Because this probably lies in the same range as that of the creams and jets used alone, a couple with serious reasons for postponing or avoiding pregnancy should be made aware of this fact.

In addition, because it costs nothing and is always available, this method should be taught to all for use on those occasions when no other method is available. It should be borne in mind, however, that even if withdrawal is successfully accomplished before ejaculation, it may have been preceded, unknowingly, by release of sperm-containing mucus. For many couples, this method is a source of anxiety in their sex relationship.

Other Methods Under Investigation.—Other methods of contraception with promise for the future are currently under investigation—some already at the stage of clinical testing. These include such methods as suppression of ovulation for varying intervals by injection of estrogen-progestogens at monthly or even longer intervals, suppression of spermatogenesis by systemic medication, immunologic suppression of fertility in the male, predictable production of ovulation, and prevention of nidation by drugs taken postcoitally.

SUMMARY

The methods discussed to this point are those which are accepted throughout the scientific world as the best ones presently available for the regulation of conception and which do not interfere with subsequent fertility. Increasingly, many of these methods are being prescribed in tax-supported medical facilities, thus making available to those of low socioeconomic status the advantages of child spacing and family planning that were up to very recently available only to the comparatively well-to-do.

A listing of known contraceptive products which are commercially available in the United States is given in Tables 1–3.

SURGICAL STERILIZATION

Medical opinions concerning proper indications for surgical sterilization of either sex range all the way from absolutely none at all to a list which includes the following: (1) afflictions of a hereditary nature involving previous offspring of the marriage or, in some instances, the hereditary involvement of one or both actual or potential parents; (2) conditions in the mother that may be aggravated by repeated pregnancies; (3) physical, mental, or emotional defects which may seriously impair the functioning of either husband or wife as an adequate parent or which cause the physician to conclude that parenthood at any future time would be hazardous or both; and (4) multiparity to a degree affecting adversely the woman's health or well-being.

That state laws regarding sterilization are not only different, but have been interpreted differently, has added to the confusion regarding the legal status of sterilization. Likewise concern has been expressed regarding the possibility of untoward after-effects of a psychological nature, particularly if remarriage or death of already-born children creates a desire for additional offspring. Hence, it would seem desirable for the medical profession to arrive at a consensus regarding sterilization that would provide solid ground for performing it where

it appears indicated. At the same time, the development and improvement of present methods and the advent of new methods of contraception should, if properly understood and widely applied, serve to diminish the need for permanent contraception by means of surgical sterilizing procedures.

The Figure and portions of Tables 1–3 are reproduced with permission from the Planned Parenthood Federation of America, Inc.

Bibliography

Inasmuch as each citation below carries its own extensive bibliography, the following listing is presented as basic rather than comprehensive.

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EXHIBIT 23

MEDICAL BACKING FOR BIRTH CONTROL GROWS

(By James C. Spaulding of the Journal Staff)

[From the Milwaukee Journal, Oct. 9, 1965]

While the Vatican debates interpretation of its doctrine on birth control, developments elsewhere indicate a growing commitment, particularly among medical and scientific groups, to solving population problems by family planning.

Pope Paul's remarks to the United Nations this week left the impression that he, at least, remained a conservative on the issue of whether the church should

alter its stand against contraception. Some Catholic leaders have urged publicly that the church abandon its contraception ban.

Among recent developments outside the church concerning birth control are these:

The United Nations children's fund (UNICEF) for the first time has placed birth control on the agenda for the executive board's annual meeting, indicating a belief that family planning should be part of its international program.

The American Medical association has dropped a 30 year old policy of neutralism toward birth control and has begun an educational program to bring doctors up to date on family planning.

The American Public Health association has adopted a policy favoring family planning as an integral part of the health programs of federal, state and local government agencies.

The agency for international development has begun providing help in family planning to foreign governments that request it.

President Johnson in his state of the Union message pledged that he would "seek new ways to use our knowledge to help deal with the explosion in world population and the growing scarcity of world resources."

The national advisory council on child health and human development has recommended increased research by the national institutes of health on fertility, sterility and population. The statement said: "We must look forward to the day when each child is wanted, when parents will be able to exercise free choice as to the number of children they wish to have."

The national institutes of health have increased their reproduction research projects to more than 300 and its spending on them to about eight million dollars.

The National Academy of Sciences—National Research council has issued a report on population growth in the United States. The report contends: "The freedom to limit family size to the number of children wanted when they are wanted is, in our view, a basic human right."

The report has been described in an article in Science, official publication of the American Academy for the Advancement of Science, as "a document of remarkable intrinsic quality." It was prepared by a 10 man committee headed by William D. McElroy, professor of biology at Johns Hopkins university.

The committee said its study showed that the population problems of the United States differed from those of underdeveloped countries, but the problems here "are nonetheless critical."

POPULATION PREDICTED

If the present fertility and mortality trends continue in this country, the McElroy committee said, United States population will surpass today's world population in 150 years.

The report said the poor and uneducated in the United States produced more children but that this did not greatly affect over-all national prosperity. It added, however:

"It is one of the factors that puts prosperity out of the reach of millions of our citizens. The burden of unwanted children among impoverished mothers in the United States is much like that experienced by mothers in undeveloped countries."

The committee also said:

Children born of parents who do not want them are more likely to suffer from personality disorders that lead to delinquency.

About 14% of the general population of the United States does not use and does not plan to use contraception. The proportion is 28% among white couples in which the wife's education stopped with grade school.

The proportion not using contraception is 43% among nonwhite couples, and it is particularly high among southern Negroes and those with a southern Negro background.

The groups in which use of contraception is least frequent lack the usual sources of information—family and friends or family doctors—to inform them about birth control practices.

Referring to family planning as a basic right, the report said:

"Most Americans of higher income and better education exercise this right as a matter of course, but many of the poor and uneducated are in effect deprived of the right. No family should be fated through poverty or ignorance to have children they do not want and cannot properly care for."

Evidence of unwanted pregnancies has been cited in recent reports on abortion. It has been estimated that at least a million illegal abortions are per-

formed annually in the United States, most of them on married women. About 5,000 mothers each year die from complications arising chiefly from unskilled abortions.

Dr. J. Robert Willson, professor and chairman of the department of obstetrics and gynecology at the University of Michigan, said in a medical article recently that about one-third of the maternal deaths in his state followed abortion, mostly among married women trying to limit family size.

SCHOOLS CRITICIZED

The reports published in Science criticized medical schools and the medical profession for lack of knowledge and teaching in family planning.

Both Dr. Willson and Dr. Raymond T. Holden, Washington, D.C., chairman of the AMA's new committee on human reproduction, agreed.

"Family planing is often discussed in a single whole class lecture (in medical school), and no time is devoted to the social and economic aspects of population growth," Dr. Willson said.

AMA ENDORSES HELP

Dr. Holden said there had been little teaching of population problems in medical school.

The AMA committee's policy statement said birth control measures should be made available to all patients who want them, consistent with their beliefs, whether they obtain medical care through private doctors or community supported health services.

In Milwaukee, birth control information and contraceptive pills and devices are available through Planned Parenthood clinics, the Mount Sinai hospital clinic and the obstetrical service at county general hospital.

In the first eight months of this year, Planned Parenthood reported, more women sought its help than in all of 1964.

Planned Parenthood's proposed poverty program birth control plan for the Milwaukee core area has failed so far to receive approval. The federal agency has asked for broader sponsorship, a larger service area and co-ordination with other agencies.

Dr. HAUSER. Mr. Chairman, I apologize to the committee for not having been able to prepare in writing a fuller statement, but as I indicated to Miss Olson, I am prepared briefly to summarize what it was I saw in my recent trip to southeast Asia—about my 10th trip to Asia on matters relating to population.

THE PHILIPPINES' POPULATION CAN DOUBLE IN 22 YEARS

Mr. Chairman, you may be particularly interested in the situation in the Philippines which is, I think, a typical example of what is now going on among many developing regions of the world where population growth rates by recent efforts to measure precisely what the growth rate is, indicates that the Philippine population is increasing at perhaps 3.2 percent per year, a rate at which the population would double about every 22 years.

It was my privilege to have a conversation with President-Elect Ferdinand Marcos at the time I visited the Philippines in November. He has since been inaugurated, as you know, sir, as President of the Philippine Republic.

When I directed his attention to this fact in connection with our general discussion of problems of economic development, his response, I think, is indicative of the problem and crisis which faces the Philippines and other such nations. His response was, when I indicated that his population might double in the next 22 years, "Well, thank goodness I am going to be President for only 4 years."

He was not pleased too much by my point that he might be reelected and have a longer period, as President, but the problem of achieving economic development and higher levels of living for a population that doubles every 22 years is obviously enormous, particularly for nations at lower economic levels as is true throughout the developing world.

THAILAND CAN DOUBLE POPULATION IN 20 YEARS

In Thailand, where I participated in an analysis of some of the data in efforts there to ascertain as precisely as might be done the growth rate of Thailand, a letter which I received only last week indicates a possible growth rate of 3.4 percent per year. That is a rate which will double Thailand's population in a little over 20 years. Again, the tremendous problems this poses for a nation that is attempting to lift itself by its bootstraps to achieve higher levels of living may be visualized.

These are just illustrative, Mr. Chairman.

WHAT IS THE ROLE OF GOVERNMENT?

If I may, I would like to close this opening statement with one further observation as it relates to our own problems at home. There has been much dispute about the role of the government, either Federal, State, or local, in providing know-how and methods of regulating family life to our people on the welfare rolls. There is a point I would like specifically to make because it came up in connection with hearings in the State of Illinois apropos of this problem. A point that is frequently made—that for Government funds to be expended to provide not only know-how, but methods of regulating family life to our people on welfare is an encouragement to immorality and is an encouragement to illegitimacy.

Mr. Chairman, I think there has been very little in the history of these United States or elsewhere that has, in a fundamental sense, been as ill grounded an opinion. It is completely oblivious of the factors which account for the fact that such a large proportion of our people, let us say on the aid to dependent children program, are unmarried or have, what we call culturally in the United States, "illegitimate" children.

TOO LITTLE OPPORTUNITY FOR THE NEGRO

I should like to submit that any student of history finds it easy to understand why it is that a large part of the nonwhites, our Negro population, lives without benefit of marriage, and have children out of wedlock. I think it is important to realize that we completely destroyed the African family during slavery; that in the century which has followed the Emancipation Proclamation, there has been little opportunity for the Negro who, until 1910, was concentrated and isolated as a subcultural group, largely in the rural slum South, divorced from contact with white society to have access to and adopt patterns of sex behavior and family organization which characterize our middle-class white society. And for people to stand up now in our cities to which our Negro migrants have come in great numbers only very recently, and to point their fingers at these people, pro-

claiming them as immoral and pointing to the horrors of illegitimacy, I think, is reminiscent a little bit of the chap who, having committed patricide and matricide, threw himself on the mercy of the court because he was an orphan.

There probably never was a time in the history of man when the words were more applicable of that great Teacher who said: "He who is without sin, let him cast the first stone at her." What we have in this situation is obviously the application of middle-class white standards to the Negro family—a standard that just isn't applicable. We are responsible as the dominant white society for what exists in that Negro community.

Moreover, it is generally not understood that many of the unions within the Negro community that do not involve matrimony are, in effect, the equivalent of common-law marriages, recognized by a number of our States; and that the Negro family is often more stable than is generally understood.

POOR HAVE SAME RIGHTS AS AFFLUENT

I simply want to make this final observation, that our poor and uneducated, whether they be white or Negro, are the only element in our population that at the present time is not regulating family size to an appreciable extent. In fact, within the United States, as within the world as a whole, it is only the poor and the uneducated, who have not had the right, the privilege, the knowledge, and the access to the means of regulating family size. And anything the Government does, on whatever level, to provide the information and the methods to our uneducated and poor would simply be providing them with the same right that our better educated and more affluent population now has access to as a matter of course.

It is for this reason, Mr. Chairman, I would urge that we ought not to be swayed by what some people proclaim are bad morals—proclaim out of the context of American history. It is much more important to see that our poor and their children do have access to the same rights of family planning that our more affluent and educated people have, and that their children do have access to the opportunities for education and general cultural advantages that will make them the kind of citizens we want in these United States.

I would say these are much more important considerations than the outdated moral questions which are being raised out of the context of history in some quarters.

With these observations, Mr. Chairman, I will be pleased to answer whatever questions the committee may have.

Senator GRUENING. Thank you very much, Dr. Hauser, for a most comprehensive and most eloquent statement.

I am particularly impressed, among many of the important contributions which you made in your statement, with your aphorism that it is absurd to think that we can mop up the floor before we have turned off the faucet. That is precisely the situation that confronts us abroad. The faucet is running fully turned on and it is likely to overwhelm us before we can even get going, assuming that we can implement this legislation and go out with full efforts following the President's suggestions which I would interpret to be mandates to

the heads of his agencies dealing with both foreign and domestic affairs.

But it still remains to be seen whether this legislation will be enacted and how vigorously it will be carried into effect thereafter. And that is our great problem here.

As you pointed out in your testimony, countries such as the Philippines face serious difficulties in the very near future if the rate of their population growth is not reduced. We in the United States, though the danger is not so immediate, will also face severe problems if our own population growth continues unchecked. David Lilienthal, has written a fine article, which I will now place in the printed record of this hearing. He describes some of the expected difficulties in the year 2000, when we can expect our population to reach the 300 million mark.

(The article referred to follows:)

EXHIBIT 24

300,000,000 AMERICANS WOULD BE WRONG

(By David E. Lilienthal,* New York Times magazine, January 9, 1966)

By the year 2000, just one generation away, the population of the United States will probably be about 300 million—100 million higher than it is now and 200 million higher than it was in 1920. Yet, in comparison with many underdeveloped nations, population growth would not seem to be a serious problem in America.

Certainly this vastly increased population will not lack for food. While population growth in Latin America, for example, has brought per capita food production below pre-World War II levels, we in the U.S. worry about overweight, spend huge sums to restrict farm production, and give away enough food to prevent famine in poor nations throughout the world. In contrast to less developed nations, we have enough space, too. Just fly over this country and see the huge, sparsely populated areas that could easily accommodate additional tens of millions.

Great differences in resources, technology and education help explain why Americans regard overpopulation as a menace only to other peoples. It can't happen here, they think. I used to think so, too; I don't any more.

During the past 10 years, much of it spent overseas, I came to the easy conclusion that if we succeeded in tripling or quadrupling food production in hungry nations—and in some areas in which I worked we did just that—the problem of overpopulation could be solved. But gradually I learned I was mistaken to believe that increased food production was the complete answer to the crisis of population abroad. Gradually, I also learned that America's overflowing cornucopia has obscured a deeper crises developing here: a population of at least 300 million by 2000 will, I now believe, threaten the very quality of life of individual Americans.

An additional 100 million people will undermine our most cherished traditions, erode our public services and impose a rate of taxation that will make current taxes seem tame. The new masses, concentrated (as they will be) in the already strangling urban centers, cannot avoid creating conditions that will make city life almost unbearable. San Francisco, to take a still tolerable example, once was one of my favorite cities—cosmopolitan, comfortable, lovely. Now the high-rise buildings have sprouted like weeds and suburban blight is advancing on the Golden Gate. The value of real estate has increased while people's enjoyment of life declines.

Historically the United States owes much of its vigor and power to population growth. (Only 50 million people rattled around in America in 1880.) Large markets, skilled manpower, huge factories, a country able to spend billions on war, space and social welfare—all this, plus 75 million passenger cars—is surely

*David E. Lilienthal is chairman of the Development and Resources Corporation, a private firm with much of its business abroad, and a former chairman of the TVA and the AEC.

a consequence of rising population. But no economy and no physical environment can sustain infinite population growth. There comes a point at which a change in quantity becomes a change in quality—when we can no longer speak of "more of the same." And another 100 million people will, I fear, make just that change in the joy of life in America.

It is probably true that as the population will grow, so will the dollar value of our output. U.S. wealth, measured by Gross National Product, is now $670 billion; barring a major economic setback, total output will be doubled in about two decades. With G.N.P. climbing at the rate of $40 billion a year, the U.S. probably can afford to build the schools, housing projects, roads and other necessities of life for 300 million Americans.

But if our resources are mainly spent merely to survive, to cope with life in a congested America, then where is the enjoyment of living? Our teeming cities are not pleasant places today; imagine them by the middle of the next century when the areas of some might be 100 times larger than they are now. This is the real possibility envisioned by Roger Revelle, director of the newly established Center for Population Studies at the Harvard School of Public Health. And it will be to the cities that tomorrow's millions will flock. Or consider the picture, drawn with characteristic wit, by economist John Kenneth Galbraith: "It is hard to suppose that penultimate Western man, stalled in the ultimate traffic jam and slowly succumbing to carbon monoxide will be especially enchanted to hear from the last survivor that in the preceding year Gross National Product went up by a record amount."

Nor does the nightmare consist only of traffic jams and a bumper-to-bumper way of life. As we have seen in the history of the last 25 years, public services only the Federal Government can provide will continue to expand. Moreover, state governments, until now unable (or unwilling) to pay their share of the bills, show signs of awakening to their responsibilities. But bigger government efforts do not produce better results for human beings; they are simply a way of getting a job done when no more feasible methods exist.

Even today, most of the nation's most serious problems are caused largely by the pressures of a too rapidly rising population. In the next generation, the problems may become unmanageable. Take four basic needs: education, water, air and power.

The quality of education is closely related to the problem of numbers. Within the next five years, we are told, the number of high school students will rise to 15 million (a 50 percent increase over 1960), forcing hundreds of communities to consider imposing stiff new taxes. Many taxpayers will refuse to accept the added burden and their children will attend even more crowded classes. Far-sighted citizens will approve new school bond issues, but the increased financial drain probably will not result in an improved education.

Our standard of democracy entitles everyone to free schooling through high school. But our educational standards are rising. Two-year junior colleges, many of them supported by cities and states, loom as the next step in our system of free, universal education. Along with the surge in enrollment at traditional four-year colleges and universities, higher education is expected to attract about 12 million students in 1980 (triple the 1960 figure).

Merely building the physical facilities for such huge increases is a formidable prospect. Creating a sympathetic atmosphere for education, and filling the need for qualified teachers is a much more staggering problem. Of course, we may argue for the radical reform of U.S. education. We may plead for overhauling the existing system of teacher training, as James B. Conant has eloquently done. But I see few signs we are about to undertake such vast changes in the machinery of U.S. education; nor does it seem possible, even if the mood for drastic reform was overwhelming, simply to order new procedures, new goals and new solutions and then put them into practice. Good teachers cannot be turned out by fiat. We do not live in a planner's paradise. Ask Robert Moses.

With increased urbanization and industrialization, demands on the water supply will be much greater than most Americans have remotely imagined. The drought in the northeast United States last summer was an indication of shortages even greater to come. And though engineers and scientists can, and will, tap new sources of water and devise ways to purify polluted rivers like the Hudson, the cost will be fantastic—hundreds of billions of dollars. Add to the current strain the pressure of a 50 per cent increase in population and the result may well be a chronic water shortage that can hardly be solved at any tolerable price.

Imaginative but impractical water schemes have been proposed, such as one to bring to the United States the almost limitless supply of far northern water, carrying it a thousand miles and more to our own boundaries. Assuming that Canada would agree to the politically prickly diversion of her waters, the cost is estimated in the neighborhood of $100-billion. But it has taken more than a generation of hot dispute and interminable litigation to decide priorities of water among our own sister states of the West. How much greater the difficulties of diverting Canada's water to care for U.S. needs?

As for nuclear-powered desalination plants, quite apart from the cost of constructing the huge installations we would need and the pipelines to carry the water inland, there is the additional problem of safety in disposing of radioactive waste. Technicians may solve the problem, but at what social cost? The conversion of precious open spaces into atomic garbage dumps?

Just as easily accessible water supplies dwindle, air pollution will increase. Air pollution is the result of congestion, industrialization and the multiplication of automobiles—factors in direct relation to population density in urban areas. Los Angeles is not an industrial city, yet at times its air is hardly fit to breathe. And with the spread of industry in the sprawling cities of the nation, more and more places will be Los Angelized.

We have long assumed that at least the air we breathe is free. It won't be for much longer as we expand our efforts to purify the atmosphere. In California, for example, an aroused public finally insisted that automobile manufacturers install exhaust filters to trap toxic chemicals. Keeping automobile fumes and industrial poisons out of the air we breathe is going to be an increasingly costly business. By the year 2000 the high cost of breathing will be a real issue, not just a phrase.

Packing too many people into an urban area increases the cost of providing still another essential of everyday living: electric power. Even more serious, such concentrations of people may make absolutely reliable electric service more and more difficult to maintain. I doubt if it was a mere coincidence, for example, that New York City needed 10 hours to restore electricity after the recent Northeast power failure while smaller communities were able to turn on their lights in a much shorter time. Growth is desirable up to a point; then the advantage of size diminishes and the multiplication of complexity multiplies the headaches. And by 1980 we can expect at least a 300 per cent increase in the nation's electrical energy needs. Most of this will flow into urban areas. The present difficulties of maintaining absolutely reliable service to such concentrations of people and industry, and holding down costs, will thus be magnified.

As chairman of T.V.A. and the Atomic Energy Commission, and in my present work in Asia and Latin America, I have become familiar with the problems of producing and distributing electricity on a large scale. Indeed, it was T.V.A. a generation ago that pioneered the concept that the greater the use of electricity the lower the cost per kilowatt hour. This is still generally true. But for great cities the exact contrary is coming to pass. To *distribute* electricity in a large, densely populated area such as New York is more costly than in smaller urban markets. Huge generating power plants produce ever lower generating costs; but to bring this power to the consumer in massive concentrations of population grows more and more expensive. Consequently, the price of this essential of modern life probably will go up in the great cities as population growth continues.

Without realizing it, we are fast approaching what may be called the population barrier beyond which lie unpredictability and, I fear, problems of unmanageable size. Consider, for example, the relationship between population growth and the poor.

The Federal Aid to Dependent Children program has doubled to more than four million cases during the last decade, while the costs have soared from about $600 million to more than $1.8 billion. Even more depressing than the numbers of families who cannot survive without welfare assistance is the phenomenon known as the "cycle of dependency."

More than 40 per cent of parents whose children receive A.D.C. funds themselves had parents who received relief checks. This cycle is sad but not surprising. Poor people tend to have more children than they want or can afford, and the children have less chance to receive the education and training they need to break the pattern. Thus, even the third generation appears on relief rolls in the U.S., the most socially mobile nation in the world. In America, reports the National Academy of Sciences in a recent study, "The Growth of U.S. Popula-

tion," "the burden of unwanted children among impoverished and uneducated mothers . . . is much like that experienced by mothers in underdeveloped countries."

Since the poor cannot contribute their share of the mounting costs of education, medical care, public housing and similar necessary government enterprises, the money must be supplied by the rest of the population through taxation. But the most painful loss is not measured in dollars but in human resources. And one measure of the potential loss is the fact that one-fourth of America's children are the offspring of poor parents.

Belatedly, we are helping poor couples who need and want financial and medical help in family planning. The White House Conference on Health in November gave high priority to birth control as part of Federal efforts to halt the cycle of dependency and poverty. Tax-supported activities in 40 states, combined with such large-scale private efforts as Harvard's Center for Population Studies and the $14.5 million grant by the Ford Foundation for basic research by the Columbia-Presbyterian Medical Center and the Population Council, herald new progress in a long-neglected field.

We tend to patronize the poor by preaching to them about birth control: though poverty-stricken parents with four, five or six children are the most publicized aspect of population growth, they are by no means the most important numerical aspect of the problem. As a matter of simple arithmetic, the four-fifths of the nation's families who earn more than the poverty-line income of $3,000 a year—and who can afford two, three or four children—produce a greater total of children than the one poor couple out of five which may have six youngsters.

In fact, the latest census information reveals that though poor families may have more children than do better-off families, the difference is much smaller than many people believe. According to the National Academy of Sciences analysis, in 1960 married women 40 to 44 years old in families with incomes below $4,000 and above $4,000 differed in the average number of children by less than one. The postwar baby boom, for example was more pronounced among middle- and upper-income families than among the poor.

Thus, these relatively well-off families are the ones mainly responsible for our rapidly rising population curve. They and their children are the ones who will account for most of the 100 million additional Americans by the end of the century.

How many children a couple should have is a decision only they should make; a government inducement or deterrent—a tax, for example—is morally repugnant and politically impossible. We cannot penalize the poor in order to limit the size of their families while we allow more prosperous parents to have as many children as they want. The large majority of middle- and upper-class parents need no birth-control help from government, nor will they welcome outside advice on so personal a matter. Yet it is this group of families who will want to have three, four or more children for the very natural reason that they like children and can afford to support them. The question is, can the *country* support them?

Any notion that The Pill or some other scientific device is the sole and complete answer is very dubious. At a symposium on birth control not long ago, Dr. Stephen J. Plank, a professor in the Harvard School of Public Health, cautioned against "the facile assumption . . . that we may be able to contracept our way to the Great Society." Birth control, he said, is a question of motivation rather than technology alone.

The neglected arithmetic of the population problem facing us is depressing. Look at this table showing the birth and death rates over the past quarter-century in the United States:

Year	Births	Rate (per 1,000 population)	Deaths	Rate (per 1,000 population)
1940	2,360,399	17.9	1,417,269	10.8
1945	2,735,456	19.5	1,401,719	10.6
1950	3,554,149	23.6	1,452,454	9.6
1955	4,047,295	24.6	1,528,717	9.3
1960	4,257,850	23.7	1,711,982	9.5
1964	4,027,490	21.0	1,798,051	9.4

67-785 O—66—pt. 1——11

Although the birth rate has been declining since the mid-50's, while the death rate has remained relatively stable, the drop in the birth rate is too little and too late to prevent an oversized population. The surge in the number of births over deaths continues (2.3 million were added to the population in 1964).

Or examine these low and high population projections prepared by the Census Bureau:

	Low	High
1970	206,000,000	211,000,000
1985	248,000,000	276,000,000
2010	322,000,000	438,000,000

The high figure would be reached if birth rates returned to the levels of the early 1950's. The low estimate—enormous as it is—is based on the possibility that the rates may decline by 1985 to the comparatively low levels of the early World War II years.

One theoretical way out of the dilemma would be to say that since America can no longer sustain complete "family freedom," some form of compulsory birth control is, regettably, necessary. It would not be the first time in our history that government intervened to restrain individual impulse in the name of collective welfare. Yet, where children and parents are concerned, I do not believe we can yet advocate the sacrifice of one freedom for the sake of preserving another. Such a "solution" would make no sense at all, theoretically, practically or ethically.

Government policies and private programs must make plain the kind of life we all face if economically comfortable families reproduce at rates they personally can afford. With equal urgency we must make plain the dangers if poor families have children in numbers they cannot afford.

Obviously, a stationary population—one in which the birth rate matches the death rate—is out of the question for many years to come. It is probably not feasible, nor even desirable. All we can hope to achieve is a slower rise in the size of our population rather than the present steep increase. What is needed is a far more drastic cut in the birth rate—a voluntary curtailment of the right to breed. It is needed, but I have no great conviction that it will happen.

For though scientific ingenuity may be able to solve many of the technological problems we are only beginning to understand people always change more slowly that technology. It is easier, after all, to design a new industrial process than redesign a cultural tradition. Yet that is the order of change we face if we are to preserve life's dignity and quality. Confronted by the crisis of population growth, we must, at present, appeal to private conscience for the sake of the general good.

FECUND FUTURE

At the estimated 1965 U.S. birth rate of 19.5 per 1,000 of population, a woman who reaches the age of 45 will have an average of three children. To achieve a stationary population, in which parents only replace themselves, the average number of children would have to drop to about 2.1. If childbearing gradually declined to this level by 1980—a highly unlikely possibility—the U.S. population would then be about 250,000,000, and 2020 the population would hit 300,000,000 and remain unchanged thereafter. At that point the birth rate would have declined to 14 per 1,000 and the death rate would have climbed to 14 per 1,000 (because a nongrowing population includes a much higher percentage of the aged).

On the other hand, if present fertility and mortality trends continue, a long-range projection by the National Academy of Sciences forsees that in about 650 years there will be one person per square foot throughout the United States, and in less that 1,500 years the weight of the U.S. population will exceed the mass of the earth—that is 6,588,000,000,000,000,000,000 tons!

Senator GRUENING. Thank you very much, Dr. Hauser. I would like to question you at great length, but I think we should proceed with the other witnesses. We are very grateful to you for your valuable contribution here.

Dr. HAUSER. Thank you Mr. Chairman. It has been a pleasure.

Senator GRUENING. The next witness is Eliska Chanlett. She is the U.S. delegate to the Inter-American Commission of Women.

Mrs. Chanlett, I see you have included pertinent biographical information in your statement so I will not duplicate it at this time.

The subcommittee also wishes to make clear that you appear today to express your personal thoughts on S. 1676.

Before you begin, will you tell us if you are fluent in Spanish?

Mrs. CHANLETT. Yes, sir, I am. In Portuguese, too, which has some bearing on the matter which I shall discuss. I wouldn't say I was completely fluent but, as they say in Spanish, me defiendo. It means I defend myself adequately.

Senator GRUENING. Go ahead.

STATEMENT OF MRS. E. T. CHANLETT, CHAPEL HILL, N.C., U.S. DELEGATE TO THE INTER-AMERICAN COMMISSION OF WOMEN

Mrs. CHANLETT. Mr. Chairman, members of the subcommittee, first of all my thanks for the invitation to appear before the Subcommittee on Foreign Aid Expenditures to share some of my personal thoughts in S. 1676.

By way of background, I am Mrs. Emil Chanlett of Chapel Hill, N.C., where my husband is a professor of sanitary engineering at the University of North Carolina School of Public Health. I myself teach sociology at a nearby predominantly Negro college. Our own contribution to the population explosion consists of a son, Christopher, in college at New York University and a daughter, Claudia, who is a senior in high school.

For the past 5 years I have been the delegate of the United States on the Inter-American Commission of Women, a specialized technical agency of the Organiaztion of American States. I am an active member of a number of educational, civic, church, and community organizations and have worked as a volunteer in some of their overseas endeavors. During World War II, I lived in Brazil for 4 years and since then have been a frequent visitor to the Latin American republics, both in official and in unofficial capacities.

LATIN AMERICA: THE WOMEN SPEAK

This morning I should like to center my remarks on Latin America, comment on some of the observable changes in atmosphere and attitudes toward family planning in that vast continent which presently has the fastest population growth in the world—and also bring to bear the point of view of those who are perhaps the most intimately involved in reproduction—namely, women.

You are familiar with the figures and I shall use them sparingly. But you should know that there is not a single document issued in connection with the Alliance for Progress—whether it deals with agriculture, transportation, health, education, or per capita income—which does not at some point mention the pressures of a population increase which thwarts any and all planning efforts at social and economic betterment.

ARGENTINA: PEOPLE WANT TO KNOW ABOUT THE POPULATION EXPLOSION

To illustrate the changing outlook, let me begin by recalling what I learned on a trip to Argentina in 1957. Upon arrival, some academic friends and I tried to put a speech of mine into colloquial Spanish. I had used a sentence which included the expression "population explosion." My literal translation, they said, would have no meaning whatsoever—in fact, there was general consternation about what I did mean. Eventually, I was advised to drop it. I did. When I returned in 1959, I had judiciously left such a reference out of my texts, only to find that some of the same people clamored for its inclusion.

COLOMBIA: PROFESSIONALS AND CLERGY DISCUSS THE POPULATION PROBLEM

A Colombian experience was somewhat similar. In 1961, gentle prodding among the educated and professionals produced some mild and hushed awareness of the population problem. By 1963, it was discussed far more openly and unselfconsciously by many, including the clergy. They were as aware as I of the many changes for the worse in their cities: The beggars, the innumerable ragged children roaming the streets and scavenging through the garbage cans, the homeless who lined the grassbanks along the freeways for a night's sleep.

I was told by welfare officials that over 70,000 of the capital's children were without schools. This is no reflection on the Colombian authorities. Their heroic efforts were simply outstripped by migration into the city and reproduction.

BRAZIL: ONLY 6 PERCENT OF TEENAGERS ARE IN SCHOOL

Brazil's school situation may be considered typical of many of the other republics: a quadrupling of physical facilities in 25 years, yet only one-half of the children between 7 and 14 are in school and of those between 12 and 18 only 6 percent are enrolled.

A market woman I talked to in one of the provincial towns, a woman about my age, told me she was trying to raise a family of 14. In addition, she said she had had three miscarriages and that four children had died in their first years. She had no husband and, to quote her, "several men had simply left." She showed unmistakable signs of another pregnancy. In that same town an upperclass career woman, a journalist, was raising a family of 18.

In Mendoza, Argentina, the maid in my hotel, a girl about 25 years old, had given birth to six—two of them were with her on the job and the four older ones had simply been abandoned in the streets.

GUATEMALA: A YOUNG MOTHER GRATEFUL FOR INFORMATION

In a Guatemalan village a young girl, no more than 20, came up to sell her wares. She had one child tied on her back, led two more by the hand, and an older one was sauntering ahead. She could hardly speak Spanish but we managed to understand each other, and when I explained that something could be done to prevent pregnancies, she followed me around the rest of the day, even though I had assured her

that she would have to see the doctor at the clinic. When we finally parted, she insisted that I accept a pair of earrings as a gift of gratitude. I don't know whether she went to the clinic, but sure hope she did.

THREE POINTS STRESS SERIOUS SOCIAL PROBLEMS

I mention these episodes neither to touch your hearts nor to entertain you, but in order to make several points:

First, large families are not confined to the lowest socioeconomic class in Latin America.

Second, frequent temporary unions are entered into and then dropped with no formalities.

Third, the economic inability of a mother alone to provide for many children results in the serious social problem of abandonment.

ADVICE IS WELCOMED WITH GENUINE EAGERNESS

Fourth, advice is welcomed with genuine eagerness. If we wish to promote political stability, as I am sure we do, the first three of these points and their socioeconomic implications must certainly be remedied.

LATIN AMERICANS CONCERNED ABOUT ABORTIONS

Signs are emerging that a beginning can be made where only a short time ago we were up against a taboo. When I made a return visit to Guatemala this past summer I learned that tax money is already quietly and on a small scale being used to provide information and contraceptive materials in some clinics in the capital. In neighboring Honduras, an enlightened Minister of Public Health has started the machinery that will make family planning clinics a reality throughout the country. And Chile, for a number of years, has had an increasing number of Government-financed clinics which operate with the express approval of the archbishop. It is interesting to note that the impetus for this pioneering approach stemmed from the growing rate of abortions and concern over the criminal implications and physical complications of the practice.

Recent figures indicate that in many of the countries well over one-fourth of all pregnancies are terminated by abortion.

A meeting on population problems held under the auspices of the Secretary General of the Organization of American States at the Pan American Union in Washington in September of 1964 and the Pan American Assembly on Population held last August in Cali, Colombia, on which Representative John Brademas has already reported to you, are further indications of changes in official posture.

POPULATION ISSUE DISCUSSED OPENLY, AND . . .

A United Nations Regional Seminar on Family Law which I attended as a member of the U.S. delegation, went on record with an expression of concern. The population issue is now discussed openly over the airwaves and in the Latin press. Volunteer family planning units are mushrooming. A vigorous young group among the clergy is often the most active positive element in debate and efforts toward implementation.

. . . THE WOMEN RESPOND

What I construe as the most heartening symptom, however is the response of women, from the humblest to the most sophisticated.

I find that women do not have to know how to read and write to be aware of the implications of childbearing with its joys and sorrows. What most of them do not yet know is that something can be done to make it the former rather than, annually, the latter. When told that this is possible, they beseech one for the means. Every piece of research from public and private clinics confirms my own impressions.

It is quite true that the Latin American family tradition is based on male supremacy and authority and on numerous children as a sign of desirable virility. If my Latin friends, market women, social workers, and physicians alike, were here before you today they would probably emphasize the fact that their men need educating and a change in outlook more than the womenfolk.

A CHANGE CAN MEAN THE BETTER THINGS OF LIFE

As a sociologist, I am aware that patterns of culture can hardly be changed overnight, especially in a situation where women already pose a threat as far as entry into the labor market and the professions is concerned. We do need to know a good deal more about what makes certain new practices—particularly those involving health and privacy—more acceptable and others less so. But a beginning has been made, based on studies abroad and in this country which show that acceptance is facilitated if: first, the help of local leadership can be enlisted; and second, the practice is one which confers a certain status. When these two favorable conditions exist, an entire community may be more easily won over.

Right now, thanks to the Alliance for Progress, large segments of heretofore isolated people are brought into contact with what we call the better things of life. For the first time the deprived are given an opportunity to view authorities in the favorable light of care and concern, assistance and service, instead of the repressive and punitive aspects to which people were accustomed. We have noted their expressions of surprise and curiosity as to why the Government should suddenly care about how they live.

A TIME TO HELP

Actually, the time is singularly ripe to move in and help. For example, many of the countries are expanding social security coverage to include new categories of workers and to extend maternal and munity officials.

I cannot emphasize enough what you have already heard from others—that it is not sufficient to make contraceptive materials available—but that such distribution must be accompanied by massive educational efforts and free and open discussion by health and community officials.

To be effective, this will require far reaching and costly training programs for additional and existing personnel. Furthermore, such programs would have to operate within viable organizational struc-

tures destined to reach all segments of society, especially those which traditionally remain untouched.

Their funding will have to provide for adequate staffing, physical facilities, and operating expenses. The task appears so vast that it might lend itself well to governmental and nongovernmental cooperation.

"CAN WE TURN OUR BACKS?"

The countries of Latin America do look to us for help, both technical and financial. Above all, they turn to us for initiative and leadership. To those who fear criticism I would say that we shall be criticized whatever we do or don't do. If we consider that the situation today in Latin America is, to some extent, of our own making, it would seem that we have a clear responsibility to assist in the search for solutions.

DARE WE NOT CARE?

For years now we have generously provided both technicians and funds to help build water supply systems, we have taught the value of preventive inoculations, the use of antibiotics, and other practices destined to reduce the infant mortality rate and prolong the span of life. In addition, we have assiduously encouraged people to seek facilities, services, and material goods for which they now clamor. Having been so successful, can we now turn our backs and say that we don't care?

Thank you very much, Mr. Chairman.

Senator GRUENING. Thank you very much, Mrs. Chanlett, for a magnificent statement.

I would like to ask you one or two questions.

On page four you say that in Chile for a number of years there have been an increasing number of government-financed clinics which operate with the express approval of the archbishop.

WHAT METHODS ARE TAUGHT IN CHILEAN CLINICS?

Do these clinics teach methods other than the rhythm method?

Mrs. CHANLETT. So far as I know, Senator, at the present time they do not officially teach methods other than the rhythm method, but they are at times interested in the research aspects of this problem and I believe, under the name of research, provide other information.

WHAT HAVE WE DONE?

Senator GRUENING. Toward the close of your statement you say the situation today in Latin America is to some extent of our own making. I wish you would elaborate on that. Why is it, to some extent, of our own making?

Mrs. CHANLETT. Well, Senator, it seems to me that ever since the Second World War, when we created the Institute of Latin American Affairs under General Dunham as part of our war efforts, we were interested in improving the malaria situation primarily, as well as the general health situation of the Brazilian people; since our Far Eastern supply of rubber had dried up and we were increasingly

dependent on Brazilian rubber extraction, we were interested in improving the health and welfare of the people in the Amazon where a great deal of this rubber came from. We were dependent also upon Brazilian quartz to some extent for our war effort; ever since the forties, then, we have had health missions in Brazil, both governmental and nongovernmental.

The Rockefeller Foundation was extremely active in cleaning up malaria and the Anopheles mosquito in Brazil; so we have in effect taught them new health practices which they have put to use and put to us extremely well.

They have reduced infant mortality significantly and they have extended the span of life.

"OUR OWN GENEROSITY HAS . . . PROVIDED THE NOOSE IN WHICH WE NOW HANG"

Inasmuch as we have done this, in most of the countries—I have just cited Brazil because there perhaps the example is most dramatic, and is even more dramatic in northern Brazil which is also the area which is shortest on food and shortest on opportunities for employment—our own generosity has in a way provided the noose in which we now hang.

FUNDS ARE NECESSARY

I might add, Senator, that you will notice toward the end of my statement a mention of adequate financing. The reason I have included this is that it is not enough to provide capital outlay funds. What brought it to mind was that I was talking about Brazil. It has come to my attention that in Brazil many, many clinics are presently being closed because there is no operating money available.

In other words, the physical facilities have been built, the personnel, to some extent, has been trained, but there are no funds for operating expenses.

Senator GRUENING. I regret to inform you that we have similar situations right in our own country. I can refer to specific laboratories designed to do research where the buildings are completed, but funds are not available to staff them adequately—a deplorable situation wherever it occurs.

WE NEED TO LEARN

Mrs. CHANLETT. I should have, Senator, perhaps put more emphasis, too, on what we still need to learn and need to know and how research needs to expand in terms of acceptability of methods. I think we have found that in India efforts have been thwarted both because methods for one reason or another were not acceptable and because of shortages of personnel; even if there is not an outright religious prejudice against certain methods, there are often reservations in people that we do not know about. We need a lot more research there.

Senator GRUENING. Well, you have made a very splendid statement. If at any time you wish to supplement that with any further ideas, they will be most welcome.

Mrs. CHANLETT. Thank you, Senator.

Senator GRUENING. Thank you very much, Mrs. Chanlett.

Our next witness is Dr. Luigi Mastroianni, Jr., of Philadelphia, who is chairman of the department of obstetrics and gynecology at the School of Medicine, University of Pennsylvania, a position he has held since July 1965.

Prior to that date, from July 1961 to June 1965, Dr. Mastroianni was a professor in the department of obstetrics and gynecology at the University of California in Los Angeles.

In 1955 he was a faculty member in the department of obstetrics and gynecology at the Yale University School of Medicine: he remained there until 1961.

Dr. Mastroianni received his A.B. degree from Yale University in 1946 and his M.D. from the Boston University School of Medicine in 1950.

He was an intern and resident in obstetrics and gynecology at the Metropolitan Hospital in New York from July 1950 to June 1954.

We are very happy to have you, Doctor. We will at this point in the record insert a prepared biographic sketch.

(The material referred to follows:)

BIOGRAPHIC STATEMENT: LUIGI MASTROIANNI, JR., M.D.

Dr. Luigi Mastroianni, Jr., is chairman of the Department of Obstetrics and Gynecology of the School of Medicine at the University of Pennsylvania in Philadelphia, a position he has held since July 1965.

Prior to that date, from July 1961 to June 1965, Dr. Mastroianni was a professor in the Department of Obstetrics and Gynecology at the University of California in Los Angeles. From 1956 to 1961 he was a faculty member in the Department of Obstetrics and Gynecology at the Yale University School of Medicine.

Dr. Mastroianni received his A.B. degree from Yale University in 1946 and his M.D. from the Boston University School of Medicine in 1950. He was an intern and resident in obstetrics and gynecology at the Metropolitan Hospital in New York from July 1950 to June 1954.

He was a research fellow in fertility and endocrinology at the Harvard Medical School and the Free Hospital for Women from July 1954 to June 1955 where he worked with Dr. John Rock.

Dr. Mastroianni, a Roman Catholic, is married and the father of three children. He was born November 8, 1925, in New Haven, Conn.

He is a diplomate, American Board of Obstetrics and Gynecology, and a Fellow of the American College of Surgeons and the American College of Obstetricians and Gynecologists. He is a member of many societies, including the American Society for the Study of Sterility, the Endocrine Society, Sigma Xi, and the Society of Gynecologic Investigators.

Dr. Mastroianni has written aproximately 40 publications in the fields of infertility, endocrinology, and reproductive biology. Since 1964 he has been a member of the Advisory Committee on Primate Centers, Division of Animal Resources, National Institutes of Health.

Proceed in your own way, Doctor.

STATEMENT OF DR. LUIGI MASTROIANNI OF THE UNIVERSITY OF PENNSYLVANIA

Dr. MASTROIANNI. Thank you very much, Senator Gruening.

I certainly appreciate this opportunity to review certain facets of research in reproduction as they relate to the population problem.

WHO ARE THOSE WHO NEED INFORMATION MOST?

Past testimony before this committee has brought into focus the dire consequences of unlimited population expansion both at home and abroad. For me, an obstetrician and gynecologist, the importance of family planning programs is perhaps more meaningfully expressed in terms of the lives of those individuals who reproduce involuntarily or who are involuntarily reproduced. Even if population pressures were not an issue (and indeed they are) there would still be a pressing need for a coordinated program to disseminate birth control information on request. In our own country the need is most evident among the postpartal and post-abortal patients on the wards of our large urban charity hospitals. Having had much of my specialty training in such hospitals as Los Angeles County Harbor General Hospital in Torrance, Calif., and having recently served as chief of obstetrics and gynecology I have been impressed that the patients served by municipal hospitals seem to evidence a great need for family planning advice. These are the very people for whom family planning advice is least available in this country.

OUR KNOWLEDGE IS STILL DEFICIENT

Recently developed methods of family planning, the pill and the intrauterine device, have opened the way for large-scale family planning programs. It is evident, however, that we do not have at our disposal the ideal method of birth limitation. Indeed, we may never have a single method which would be suitable for use in all circumstances. At present the range of choices is narrow, and this, in my opinion, is a reflection of the glaring lack of basic information in reproductive biology.

Examples of deficiencies in our knowledge of reproductive processes are numerous. In the normal course of events an ovum (egg) is released once monthly. The basic processes associated with release of the egg by the ovary are not as yet completely understood. The egg is then transferred into the fallopian tube, which serves as a bridge between the ovary and the uterus (womb). There it is fertilized by one of many spermatozoa (male seed) which were deposited in the vagina some hours earlier and subsequently conditioned in the female reproductive tract to acquire the capacity to penetrate the egg.

The effect of the environment of the reproductive tract of the spermatozoa and the conditioning process which precedes fertilization are areas which are not yet fully explored. After ovum penetration by one spermatozoan, somehow there is a barrier to further sperm penetration. The process of fertilization, beginning with penetration of the egg by the spermatozoan and ending with the joining of the male and the female components (pronuclei) within the egg itself is not completely understood in the sea urchin, let alone in man.

Once fertilized, the egg develops in the tube where it is contained for about 3 days. We know that if the egg is released prematurely from the tube it will not survive, but we do not know as yet how in man or in the subhuman primate the egg is retained temporarily within the tube. After the egg has been transferred to the uterus, it remains free in uterine fluid for about 3 days, and finally it is em-

bedded into the lining of the uterus. The quality of the secretions of the tube and the uterus in which the developing ovum spends the first 6 days of life has not been completely explored in man, or for that matter in the rabbit. The processes which bring about attachment of the developing ovum (implantation process) are also not clear.

Of the two newer methods of family planning, one, the pill, was developed as a result of application of information derived from laboratory animal experiments. The other, the intrauterine device, arose out of empiric observations, initially carried out in patients.

IUD STUDIED IN MONKEYS

We know that the intrauterine device works, but we have turned to the experimental animal—in this case the subhuman primate, the monkey—to explain its mechanism of action. Ovum recovery experiments in the superovulated, artifically inseminated Macaque monkey in our laboratory (Am. J. Obst. & Gynec. 93:416, 1965) support the thesis that the presence of an intrauterine device is associated with rapid discharge of eggs from the fallopian tube. All of the ova thus far recovered have been found in the uterus at a time when they should have been in the fallopian tube. Not one has been fertilized, suggesting that the transfer from the tube to the uterus occurs shortly after ovulation, and, among the ova thus far examined, prior to fertilization.

". . . NO JUSTIFICATION ON THE BASIS OF AVAILABLE EVIDENCE TO DATE OR THE VIEW THAT THE INTRAUTERINE DEVICE IS AN ABORTIFACIENT"

Our data, then, do not support the commonly held concept that the device interferes with the implantation process. Since the eggs are not fertilized and hence certainly not implanted, there is no justification, on the basis of available evidence to date, for the view that the intrauterine device is an abortifacient.

These experiments are being continued in the monkey to explain the way in which the rapid transfer of ova is brought about, and, where possible, are being extended to man. A better understanding of some of the basic processes of ovum transport may very well open the way to new and imaginative methods of family planning. Conceivably, other means can be devised to bring about the premature release of ova from the tube, hopefully before they are fertilized.

The current lack of basic information in reproductive physiology is now receiving increased attention, thanks to the resources of the Institute for Child Health and Human Development. Training programs are being funded which are now beginning to attract talent into this area, and I believe that the area as a whole is being supported adequately whenever clear justification for support is presented.

". . . A FIELD IN WHICH NO DELAY SHOULD BE TOLERATED"

In all of medical research there is, however, a lag period between laboratory discovery and practical application of methods to the patient. This is painfully evident in the field of reproduction—a field

in which no delay should be tolerated. I believe it arises, at least in part, out of lack of availability of funds for patient-oriented research in practical developmental programs. In addition to programs directed at patient service, we need programs directed at patient-oriented research, possibly with the subhuman primate, the monkey, as the intermediary. Such programs should be located in medical centers which have already in them a hard core of basic scientists. In this way a dialog could be established between the biochemist and biologist on the one hand and the research-oriented clinician on the other.

A comprehensive approach to the problem is long overdue, Senator, and the delay has been costly.

Thank you very much.

Senator GRUENING. Thank you very much, Dr. Mastroianni.

This is a very important contribution to our discussions.

I think it is clear that there isn't any one method as yet and that we are still in the early stages of experimentation.

The contribution which you have made to what we now know about the reproductive process has been no less significant than has been your presence here today. I would like to put into the record of this hearing an article which you and Dr. Chusri Hongsanand wrote describing some of the work you have done in studying the action of the intrauterine device.

(The article referred to follows:)

EXHIBIT 25

MECHANISM OF ACTION OF THE INTRA-UTERINE CONTRACEPTIVE DEVICE IN THE PRIMATE. 1: TUBAL TRANSPORT OF OVA AND DISTRIBUTION OF SPERMATOZOA

(By Luigi Mastroianni, Jr., M.D., and Chusri Hongsanand, M.D., Excerpta Medica Foundation, N.Y. Academy of Medicine Building, 2 East 103d Street, New York, N.Y.)

The mechanism of action of the intra-uterine contraceptive device is a subject of continuing speculation. One popular concept is that it causes failure of implantation through some influence on myometrial or endometrial behavior. A few investigators, notably Margulies [1] and Tietze,[2] have suggested the possibility that the coil may influence reproductive processes at the tubal level, perhaps by causing rapid transport of ova into the uterus. The relatively low incidence of tubal pregnancy among patients using the device would seem to support this idea. The purpose of this study is to evaluate the influence of the intra-uterine coil on primate reproductive processes.

Methods and materials

Adult female monkeys (*Macaca mulatta*) of proved fertility were used.[3] Coils of the Margulies type [4] were cut to size and introduced into the uterine cavity *per vaginam*. It was found that the colliculus, a structure which protrudes from the anterior lip of the cervix into the cervical canal, could be bypassed easily and no difficulty with vaginal insertion was encountered. Superovulation was induced according to the system outlined by Simpson and Van Wagener.[5] Human urinary

[1] MARGULIES, L. C.: "Permanent reversible contraception with an intra-uterine plastic spiral (perma-spiral)," *Intra-Uterine Contraceptive Devices* (C. Tietze, S. Lewit, eds.), 61–68. Amsterdam: Excerpta Medica International Congress Series No. 54, 1962.

[2] TIETZ, C.: "Third Progress Report, Cooperative statistical program for the evaluation of intra-uterine contraceptive devices. February 1964," National Committee on Maternal Health, New York City.

[3] The authors are grateful to Professor Prasad of the All-India Institute of Medical Sciences, New Delhi, and Dr. Sheldon Segal of The Population Council, New York, for arranging the procurement of these animals in India.

[4] The authors would like to thank Dr. Lazar Margulies for supplying the coils used in this study.

[5] SIMPSON, M. E., and VAN WAGENEN, G.: "Induction of ovulation with human urinary gonadotropin in the monkey," *Fertility and Sterility, 13:* 140, 1962.

gonadotropin,[6] 550 units, was given intramuscularly daily for six days beginning on cycle day 5, followed by 275 units and 2000 I.U. of human chorionic gonadotropin,[7] for three days in coil and noncoil (control) animals. Artificial insemination with specimens obtained from adult males of the same species was carried out daily during the last three days of gonadotropin treatment. The semen was obtained by electroejaculation.[8] After standing at room temperature for 10 minutes, the liquified portion of the ejaculate was introduced into the vaginal fornix, and the congulum then inserted to act as a vaginal plug. Approximately 24 hours after the last ovulating injection, the abdomen was entered under *Sernyl* anesthesia.[9] Ovaries were carefully inspected for fresh corpora lutea. Each fallopian tube was then flushed with warm Krebs-Ringer phosphate solution, using the method recommended by Hartman.[10]

The effluent was collected in plastic receptacles and inspected microscopically for the presence of ova and spermatozoa.

Results

In eight control (noncoil) monkeys, 21 fresh ovulation points were noted. Eleven ova were recovered, yielding a recovery rate of 52.4 percent (Table I).

TABLE I.—*Control (noncoil) series*

	Monkey No.								Total
	1	2	3	4	5	6	7	8	
Right tube [1]	2/2	0/2	2/2	2/3	0/1	1/2	0/1	1/2	8/13
Left tube [1]	1/2	0/1	0/1	1/1	0/0	1/1	0/0	0/2	3/8

[1] Ova recovered/ovulation points.
Overall recovery rate, 52.4 percent.

Seven coil monkeys were studied (Table II). Ova were recovered in one in which the coil was discovered to be lying free in the vagina. In the remaining six, the coil had remained *in utero*. There were 15 ovulation points; no ova were recovered. Spermatozoa were present in the tubal washings in four of six animals.

TABLE II.—*Coil series*

	Monkey No.							Total
	C_1	C_2	C_3	C_4	C_5[1]	C_6	C_7	
Spermatozoa	-------	+	+	+	+	-------	+	-------
Right tube [2]	0/1	0/2	0/2	0/2	1/1	0/1	0/2	0/11
Left tube [2]	0/1	0/1	0/3	0/0	2/3	0/0	0/0	0/8

[1] Coil in vagina; excluded from total.
[2] Ova recovered/ovulation points.

The absence of ova in the fallopian tubes of the coil animals could have resulted from failure of ovum pickup or from rapid transport of ova into the uterus. In an attempt to differentiate between these possibilities, a ligature was placed just beyond the utero-tubal junction on one side in a group of six coil animals. A similar protocol was followed. On the ligated side there were ten ovulation points; five ova were recovered (Table III).

[6] Generously supplied as *Pergonal* by Dr. Charles Thompson of the Cutter Laboratories, Berkeley, California.
[7] Generously supplied as *APL* by the Ayerst Company.
[8] MASTROIANNI, L., Jr., and MANSON, W. A. Jr.: "Collection of monkey semen by electroejaculation," *Proceedings of the Society for Experimental Biology and Medicine, 112*, 1025–1027, 1963.
[9] *Sernyl* was generously supplied by the Parke-Davis Company.
[10] HARTMAN, C. G.: "Recovery of primate eggs and embryos. Methods and data on the time of ovulation," *Western Journal of Surgery, 52*, 41–61, 1944.

TABLE III.—*Coil series*

	Monkey No.						Total
	C_8	C_9	C_{10}	C_{11}	C_{12}	C_{13}	
Spermatozoa	+	0	+	+	+	+	
Right (ligated) tube [1]	1/2	0/1	1/1	0/1	2/3	1/2	5/10
Left tube [1]	0/3	0/3	0/2	0/2	0/2	0/2	0/14

[1] Ova recovered/ovulation points.

On the unligated side there were fourteen ovulation points; no ova were recovered. Spermatozoa were present on the unligated side in five of the six monkeys.

Conclusions

Normally the ovum is retained in the fallopian tube of the primate for approximately three days before it is delivered to the uterus.[11] In the above experiments, laparotomy was carried out within five hours after the expected time of ovulation, judged to occur within 18 to 20 hours after the last ovulating injection. In the control animals, the ovum recovery rate was approximately 50 percent. Failure to recover more ova may reflect the technical difficulties involved in flushing the tubes *in situ*. Other possibilities are that not all of the ova released from the superovulated ovaries were picked up by the tubes, or that luteinized follicles were misidentified as ovulation points. Absolute confirmation of follicular rupture would have required oophorectomy and serial section. Among the coil animals not one ovum was recovered. Although the series is small, the difference between the two groups is very significant. The absence of ova could be explained in one of two ways: failure of ovum pick-up by the tube, or rapid transport of ova from the fallopian tube to the uterus.

Ovum distribution in the fallopian tubes of coil animals was studied further in a series of coil animals in which one fallopian tube was ligated at the uterotubal junction. Recovery of ova from the ligated side at approximately the same rate as in the noncoil animals suggested that the coil did not impair the mechanisms of ovum pick-up. Although extremely unlikely, the possibility that the effect of the coil was neutralized by placement of the ligature has not been excluded.

The presence of spermatozoa in the tubal washings from coil monkeys was expected. Spermatozoa have been recovered from the fallopian tubes of patients with coils in place.[12]

The evidence strongly suggests that in the Macaque the presence of an intrauterine coil is associated with a rapid transport of ova from the fallopian tube. This occurs relatively shortly after the ova are picked up, probably within four hours or less. Several ova in the control series were still in cumulus, and four of five ova recovered from the ligated side in the coil group were in cumulus, suggesting that the transport of ova from the opposite tube occurred shortly after ovulation. It is not unlikely that ova are extruded before fertilization has occurred, but an assessment of the relationship between the rapid transport of ova and fertilization must await successful recovery of ova from the uterus or vagina in coil animals. Efforts in this direction are presently being made.

Summary

Intra-uterine coils were introduced *per vaginam* in adult female monkeys (*Macaca mulatta*). In coil and noncoil (control) animals, superovulation was induced with human urinary gonadotropin and human chorionic gonadotropin. Artificial insemination with electroejaculated semen was carried out daily during the last three days of gonadotropin treatment. Approximately 24 hours after the last ovulation injection, ovaries were inspected for fresh corpora lutea and the fallopian tubes flushed for the recovery of spermatozoa and ova. Among eight noncoil animals, the recovery rate was 52.4 percent. Among six animals with the

[11] HARTMAN, C. G.: "Recovery of primate eggs and embryos. Methods and data on the time of ovulation," *Western Journal of Surgery, 52*, 41–61, 1944.

[12] MALKANI, P. K., and SUJAN, S.: "Sperm migration in the female reproductive tract in the presence of intra-uterine devices," *American Journal of Obstetrics and Gynecology, 88*, 963, 1964.

coil still in place, there were 15 ovulation points; no ova were recovered. One animal in the coil group yielded four ovulation points; three ova were recovered, but the coil had been expelled. Spermatozoa were recovered from the fallopian tubes of four of six coil animals. The ovum recovery experiment was carried out after one fallopian tube had been ligated at the utero-tubal junction in six coil animals. There was a 50 percent recovery rate in the ligated side in contrast to zero percent in the unligated side. Spermatozoa were recovered in five of the six monkeys from the unligated side. It would appear that, in the Macaque monkey, the presence of an intra-uterine device is associated with rapid discharge of ova from the tube into the uterus. Sperm migration remains unimpaired.

Senator GRUENING. You are familiar, of course, with the work of Dr. Rock.

Dr. MASTROIANNI. Yes, indeed.

Senator GRUENING. The pill which he devised seems to be increasingly used by people regardless of religious affiliation. Has that been your experience?

Dr. MASTROIANNI. Yes, it has. I worked with Dr. Rock in 1954 and this was at a time when the first pills were being given to the first small group of patients. They were infertility patients and he was assessing the effect of the pill on the physiology of reproduction in this group. The pill is certainly a major breakthrough and I believe it does allow expansion of family planning programs in a very real way. Without the pill, and without the recently developed or recently modified intrauterine contraceptive device, we would have great difficulty expanding our family planning programs.

TEACHING OF CONTRACEPTIVE METHODS IN MEDICAL SCHOOLS

Senator GRUENING. Are contraceptive methods now taught in medical schools so far as you know?

Dr. MASTROIANNI. They are taught in some medical schools and they are certainly taught at the University of Pennsylvania.

We have incorporated into the course in obstetrics and gynecology a series of lectures covering reproductive physiology. We try to relate various methods of family planning to reproductive processes so that the student will be introduced to the field. Hopefully some of the better students will be interested enough to want to consider a career in reproductive physiology and in obstetrics and gynecology.

IS THE RHYTHM METHOD EFFECTIVE?

Senator GRUENING. Do you consider the rhythm method to be an effective method of contraception?

Dr. MASTROIANNI. I wish I could say that the rhythm method is an effective method. There isn't one whit of evidence, however, that it is. I think it is effective among individual couples who are very highly motivated and who have the intelligence and the ability to count out the days and also the willingness to adhere to the period of abstinence recommended. Even when a long period of abstinence is observed, the method is certainly not foolproof. I suspect that many of the rhythm failures, even among people who use the method very conscientiously, are due to the fact that the spermatozoa live in the reproductive tract for an interval of time and may possibly retain their fertilizing ability for as long as several days.

Once ovulation has occurred, that is, in the postovulatory phase of the menstrual cycle, intercourse would be quite safe. We do not as yet have an effective means by which we can time ovulation accurately and, furthermore, even if we did, the means would probably be relatively cumbersome and not really applicable to large segments of our population.

WHAT ABOUT THE PILL METHOD?

Even the pill method requires motivation. This was painfully clear to us in California. A fair number of patients who were given the pill failed to return after the first cycle. They had to be sought after and the importance of the daily use of the pill had to be emphasized. If motivation was a problem with such a simple approach as taking a pill every day from day 5 to day 25, involving simply keeping track of the menstrual cycle, how much more of a problem would it be to use a means for ovulation detection, or ovulation prediction within 2 or 3 days.

We ought to explore every means to find out more about the ovulatory process. I have a feeling that eventually we will be in a position to detect ovulation with reasonable certitude, or maybe even to predict it. This will result in a method which will be useful for certain couples, but certainly it will not be a widely used method from a practical point of view.

Senator GRUENING. Well, thank you very much, Dr. Mastroianni. I think you have made a very valuable contribution to our discussions.

Our next witness is Dr. Roger Lincoln Shinn, New York City, professor of applied Christianity and dean of instruction, Union Theological Seminary; adjunct professor of religion, Columbia University.

BIOGRAPHIC STATEMENT: DR. ROGER LINCOLN SHINN

He was born in Germantown, Ohio, on January 6, 1917, and he received his A.B. degree from Heidelberg College in Tiffin, Ohio. He received his bachelor of divinity degree from Union Theological Seminary in 1941, his Ph. D. from Columbia University in 1951, and his doctorate in divinity from Mission House Theological Seminary in 1960.

Dr. Shinn is married and the father of two daughters. He is a veteran of World War II, and served in the U.S. Army from 1941 to 1945.

His teaching experience includes more than 5 years—from 1949 to 1954—as chairman of the department of philosophy at Heidelberg College.

Dr. Shinn was ordained by the Northwest Ohio Synod, Evangelical and Reformed Church in Toledo, Ohio, in 1946. We know the church today as the United Church of Christ.

Author of many publications, Dr. Shinn has written "Tangled World" for Scribners, published in 1965, and he was editor of "The Search for Identity: Essays on the American Character" for Harper and Row in 1964. He has contributed numerous chapters or essays to several books, including the "Handbook of Christian Theology," "What Is the Nature of Man?" and "The Westminster Dictionary of Christian Education."

From 1961 to 1965 Dr. Shinn was president of the board for homeland ministries of the United Church of Christ. He serves on many committees and is a member of the American Theological Society, the Society for Theological Discussion and the American Society of Christian Social Ethics.

We are very happy to have you here, Dr. Shinn.

STATEMENT OF DR. ROGER LINCOLN SHINN, NEW YORK CITY, PROFESSOR OF APPLIED CHRISTIANITY AND DEAN OF INSTRUCTION, UNION THEOLOGICAL SEMINARY; ADJUNCT PROFESSOR OF RELIGION, COLUMBIA UNIVERSITY; ACCOMPANIED BY REV. RAY GIBBONS, DIRECTOR, COUNCIL FOR CHRISTIAN SOCIAL ACTION OF THE UNITED CHURCH OF CHRIST

Dr. SHINN. Senator Gruening, I am grateful for this opportunity to testify on one of the most portentous issues confronting mankind today—the expansion of the world's population. I come as a representative of the Council for Christian Social Action of the United Church of Christ. The director of that council, the Reverend Dr. Ray Gibbons has been in the room, but has been called out to the telephone and I hope he may join me in a minute.

Senator GRUENING. I hope he will.

Dr. SHINN. This council is made up for the most part of persons elected by the General Synod of the United Church of Christ. I should make clear, however, that neither the council nor I pretend to speak for the 2 million members of this church.

"RESPONSIBLE PARENTHOOD AND THE POPULATION PROBLEM"

The Council for Christian Social Action has been on record since 1960 with a statement on "Responsible Parenthood and the Population Problem."

I should like to leave with the subcommittee a copy of that statement which can be appended to my own statement.

Senator GRUENING. It will be printed in the record at the conclusion of your statement.

Dr. SHINN. Thank you, Senator.

I will quote briefly from it to give the import of its position for the issue now before the subcommittee. The statement says:

> We hold that responsible family planning is today a clear moral duty. We believe that public law and public institutions should sanction the distribution through authorized channels of reliable information and contraceptive devices.

The same document of the Council goes on to state the implications of this belief for international policy:

> . . . those responsible for international technical assistance programs should include family limitation helps to those governments requesting them.

Thus it is clear that S. 1676 now under study by this committee is consistent with the stand of the Council for Christian Social Action.

"NO MORAL UNDERSTANDING CAN IGNORE FACTS"

I come to this issue as a scholar in the field of ethics, concerned with the moral issues that affect the well-being of the human race. I am not

a specialist in the medical or demographic sciences, and I cannot add to the impressive testimony this subcommittee has already heard from such experts. However, no moral understanding can ignore facts. Hence, I shall mention very briefly some of the well attested data that make the problem of population so critical today.

As the subcommittee well knows, it took all of human history until 1850—perhaps a million years—for the world's population to reach the figure of 1 billion. In the next 130 years the number jumped from 1 to 3 billion. Now we are doubling the population every 35 years—in Latin America every 23 years. At the present rate the world, which now holds about 3.3 billion people, will in 2150 A.D. have 150 billion. In the United States the continuation of present tendencies would mean a population in 150 years as great as that of the whole world today—and in 650 years a mass of people crowded in at the ratio of one person per square foot throughout the country.

AN ETHICAL DECISION: CRUELTY OR HUMANITY

Obviously all this will not happen. Something will slow down the process. The traditional methods of starvation and war are both at work in the world now and they can be greatly expanded. But such grim methods are not a necessity. The same scientific achievements that have reduced disease and prolonged life, thus contributing to the population explosion, have also provided humane methods for the voluntary regulation of population.

The choice before mankind is not whether we shall use some methods to limit growth of population. We are already using many methods. The choice is whether we shall increase blind and cruel methods or voluntary and humane methods. This is not simply a technical choice. It is an ethical decision.

S. 1676 OFFERS OPPORTUNITY TO MANY

The bill under consideration by this subcommittee aims to encourage study, research, and discussion of the issues involved in the growth of population and to increase access to information by those who want it. The bill does not browbeat or compel. It offers an opportunity to many people in this country and throughout the world.

THREE MORAL VALUES AT STAKE IN S. 1676

I see three important moral values at stake in this proposal: the contributions to freedom, to peace, and to the dignity of man.

FREEDOM

1. Freedom: Man need not be the victim of his fertility. That fertility, important to the survival of the race in some periods of history, now theatens the race. But its threat does not make us helpless.

In the United States a majority of families practice some sort of planning of procreation. Their children are wanted, not the result of fate or accident. People are free to choose methods of planning in accordance with their consciences and their desires. But this freedom is at present denied to some, due to ignorance or poverty. One result

is that great numbers of children, whose birth is often feared rather than desired, are born into families with low education and low standards of living. These families are deprived by circumstances of the freedom available to most families.

The same pattern prevails on the world scale. The countries with the highest birth rates are repeatedly the countries with the lowest education and economic production. The availability of information and methods for birth control will mean that people in these countries have the same freedom given to people in the wealthier countries. There is abundant evidence—from countries like India, Pakistan, South Korea, Ceylon, and Malaysia—that this freedom and opportunity are wanted. As John D. Rockefeller 3d has reported, "The governments of half the people in the underdeveloped world now officially favor family planning." If we are concerned for mankind, we cannot deny to them the freedom so widely practiced in this country.

Today the opportunity for family planning, in accordance with the personal beliefs and purposes of parents, is a right available to part of the human race. The same right is closed to many because of poverty, ignorance, and geography. Justice demands that this basic human right be opened to all.

PEACE

2. Peace: In nation after nation the growth in population outruns the growth in food, economic goods, and the institutions and opportunities of civilized life. Already we live in a world where a majority of people have inadequate food, where 10,000 a day die of starvation or malnutrition. Those who look ahead see an increasing likelihood of large-scale famine. Obviously, food is only one of many shortages in impoverished societies. Housing, education, access to the opportunities of culture, the whole relation of man to his natural and social environment—these are equally important.

Among a minority of the people of the world today the standard of living is rising dramatically. But the poor nations remain as poor as ever. Often the best efforts of a society reinforced by help from other nations, including the United Nations and the United States of America, produce an economic growth that is canceled out by the greater rate of population growth. The consequent hunger and frustration are a constant threat to peace and stability. A desperate people, suffering in poverty in a world where prosperity is a tantalizing possibility, are not likely to be patient. Those who feel they have nothing to lose by war are not likely to be impressed by the dangers of worldwide holocaust. But a people with moderate security, with hope, with a voice in their destiny, can see the importance of peace.

In a suspicious world any proposal can be misunderstood. Thus it has been charged that the wealthy, technologically developed societies favor birth control as a device to fend off the threat of expanding impoverished societies, usually of different races. Therefore, I think we should make it clear that the United States, as the world's wealthiest society, is simply seeking to make available to other societies, when they want it, the same information and devices that we have found beneficial for ourselves. We should also seek every way of coopera-

tion with international agencies, especially the United Nations, and we should see population control, not as a substitute for other contributions to economic development and peace, but as one of the many ways in which we help societies that are helping themselves.

DIGNITY OF MAN

3. The dignity of man: By extending the exercise of responsible freedom and reducing the mastery of fate and accident in human life, population planning increases the dignity of man. It enhances the meaning of conjugal love by freeing it from the threat of unwanted consequences. There is plenty of evidence that most married couples and all societies want children. But couples and societies do not want an unlimited number of children coming in a rapid succession that is not good for parents, children, or society. The birth of unwanted children is hard to reconcile with the dignity of man. Abortion, one widespread alternative to controlled conception in some locales, means a cheapening of the meaning of life. The starvation and deprivation that often accompany the explosion of population demean the dignity of man. How can a society maintain the belief that human life is sacred when thousands of its members are starving and many more are doomed to misery? Humanity shows its respect for persons, not by exalting their numbers, but by offering them the opportunities of genuine human living.

A respect for the dignity of man means that we need to respect the consciences of people. At this point we need to note that some people have conscientious objections, rooted in religious beliefs, to some methods of birth control, particularly the use of contraceptives. I speak from a faith that God wants men to use their scientific skills to enhance the meaning and richness of life, and I believe that the planning of population contributes to that end. At the same time I recognize the integrity of those with different scruples from mine. Society has a responsibility to respect their consciences, just as they have a responsibility to respect the consciences of those who believe that contraceptives are a contribution to responsible family planning.

S. 1676 ". . . MAKES AUTHENTIC ALLOWANCE FOR DIVERSITY OF CONSCIENCE"

As I read the proposed legislation before this committee, I am convinced that it makes authentic allowance for diversity of conscience. It emphasizes the voluntary character of its programs and the value of studies in many ways of meeting the issues of population. People remain free to select methods they approve morally or reject for themselves all methods. All that anyone is denied is the power to enforce his moral convictions upon others by denying them the information to act upon their convictions.

There remain a few who think it inappropriate for the Government to take any action in an area that is highly personal and in which our society has no moral unanimity. But we should realize that the proposed legislation does not authorize the Government to control the private lives of people. The role of Government is confined to encouraging research and disseminating knowledge in order that per-

sons may make their own decisions. We should realize also that government almost never waits for unanimity in society before it acts. In a democratic society government goes to great effort to avoid coercing the consciences of any dissenters, but it cannot allow dissenters to veto the policies that the great majority believe are right.

GOVERNMENT CAN ENCOURAGE PEOPLE TO CONSIDER SERIOUSLY THE RESPONSIBILITY OF PARENTHOOD

Parenthood is one of the greatest and noblest of all human responsibilities. Yet in the nature of life and society it can be exercised needlessly. Society requires people to pass tests before getting a license to drive a car. It demands rigorous qualification of teachers, physicians, architects, policemen. Yet people may, with little forethought or concern, undertake the greater responsibility of begetting and rearing children. Because of a reluctance to intrude into private life, government does not stop them. But the least government can do is encourage them to consider seriously this responsibility and, when they are willing, to make parenthood a responsible decision.

DR. SHINN ENDORSES S. 1676

Let me summarize. Increasingly today men are convinced that the right of the family to plan procreation is a contribution to the freedom, the peace, and the dignity of man. For these reasons I endorse the aims of S. 1676, and I thank the subcommittee for this opportunity to testify.

Senator Gruening, I have been joined now by Dr. Ray Gibbons whom I introduced to the subcommittee earlier.

Senator GRUENING. Thank you very much.

We are very glad to have you, Dr. Gibbons.

Dr. Shinn, I would like to ask you one or two questions.

Your paper emphasizes very correctly and very impressively the epochal aspects of this situation. You say on page 2 "We are already using many methods. The choice is whether we shall increase blind and cruel methods or voluntary and humane methods."

PREVENTION IS BETTER THAN DESTRUCTION

The Washington Post has been conducting a series of articles on abortion and it is a very alarming series. It indicates that about a million abortions are being performed every year in the United States. This is a very dangerous method fraught with great risk to the health and even the survival of the person undergoing this abortion, and it also implies the definite destruction of life that has already begun.

Would you not think that this was an added argument for supporting prevention, which is what contraception is, rather than the destruction of life, after it is once started, with all its attendant risks? Isn't this a very important aspect of the moral issues involved?

Dr. SHINN. I certainly think it is, Senator, and I think the American public is not sufficiently aware of that, but I think there is no question of the moral superiority of prevention of conception to abortion.

S. 1676 ENVISIONS A MORE DESIRABLE COURSE OF ACTION

Now, I think it important to understand with compassion the reasons that prompt many people to seek abortion, but I think we could remove those reasons by a more desirable course of action such as this bill envisions.

Senator GRUENING. Well, it is obvious that those who seek abortion are in a state of desperation and that they feel impelled to take the great risks involved and the other difficult aspects because they are in this deperate state of mind, and that, therefore, it would seem to me that whatever may be the religious scruples of some against contraception, this state of desperation and the use of abortion remains a real possibility and a reality of mind, and we must realize the essential difference between abortion and the thoroughly humane methods of contraception, the moral aspects of which are not very doubtful, although there are some groups that feel they are.

Dr. Gibbons, have you a statement?

Dr. GIBBONS. No, I have not a statement except that our Council for Christian Social Action considers it a great privilege to present testimony on the moral implications of the bill that is under consideration and if we made any contribution toward its adoption and passage, we are pleased indeed.

Senator GRUENING. You have made a very valuable contribution, Dr. Shinn.

I find that we have a live quorum call on the floor of the Senate and I must leave.

I would like to continue this dialog further but duty compels me to obey that call.

Dr. SHINN. Thank you, Senator.

Senator GRUENING. Thank you very much.

(The statement to which Dr. Shinn referred earlier follows:)

EXHIBIT 26

RESPONSIBLE PARENTHOOD AND POPULATION PROBLEM

(Adopted by the Council for Christian Social Action of the United Church of Christ, January 30, 1960)

The Council for Christian Social Action of the United Church of Christ affirms the following statement and calls upon the members of our churches to give it earnest thought and prayerful consideration.

A major problem of our time is popularly called "the population explosion." It presently challenges the thinking of political leaders and of social scientists who are engaged in programs to improve the welfare of people everywhere. Technological progress has reduced death rates and improved opportunities for human life to such an extent as to make possible the doubling of the world's population in the last half century, and to give us the expectation of almost tripling our present numbers in another half century. This increasing population demands attention from all, particularly those who are already concerned about the misery and hunger which always accompany population pressures. Christian teaching concerning the rights of people yet unborn demands that we learn how to control population growth. So it is important that the church should speak to this problem.

The problem of population control is related to the institution of the family. Since all children need personal love and nurture, the church must do what it can to support the development of strong family life.

The Christian family begins when two persons are drawn to each other in the covenant of marriage, and the two "become one flesh" (Eph. 5:31). Marriage,

in the Christian understanding of it, is a divinely given vocation as well as a free decision on the part of two people. It is a responsible act on the part of two responsible persons. It has its basis, indeed, in nature: it is the response to a mutual attraction of the one for the other. It includes the specifically ethical element of a life-long mutual loyalty. From the perspective of the marriage partners who are ethically serious the marriage bond requires freely-given mutual love.

This freely-given mutual love will express itself in various ways: in companionship, in acts of selfless service, and in sexual intercourse, all of which are necessary parts of a true marriage. Two purposes are achieved in sexual intercourse: the expression of love between two partners and the procreation of children. The first of these purposes may be achieved without the other. The procreation of children is a further gift of God, and a sharing in His creation. As was said by an ecumenical study group, "A knowledge of the relation of sexual love to the procreation process gives to a couple the power, and therefore the responsibility, to lift the begetting of children out of the realm of biological accident, or 'fate,' into the realm of grace where man is free to wait upon God and consciously to respond to his will." *

In a responsible Christian marriage there will ordinarily be a willingness to enlarge the family fellowship to include children, and a desire to establish an environment in which children can find security, status, and a sense of being wanted and needed. Questions which need to be asked by every parent relate to how many children they shall have, and at what intervals. These questions need to be answered responsibly as parents carefully consider their economic, spiritual, psychological, and physical ability to make adequate provision for children, to surround them with love and care, and to help them prepare for the opportunities and duties they must meet. The physical and emotional health of the wife-mother and husband-father must also be a major concern.

Since husbands and wives owe a responsibility to other families on the earth, they must take into account the relation of natural resources to the total population. Under present circumstances this means that most couples have not only the right but also the moral obligation to space and limit the number of births. Procreation without regard to the consequences may be as irresponsible as refusal to assume the duties of parenthood.

In considering this problem husbands and wives who accept the obligation to space and limit the number of their children are confronted with the decision as to the means they will use. Is periodic continence the only morally acceptable method, or may mechanical and chemical barriers to the union of sperm and ovum be employed? We endorse the position taken in 1958 by the Lambeth Conference of the Bishops of the Anglican Communion: "It must be emphasized once again that family planning ought to be the result of thoughtful and prayerful Christian decision. Where it is, Christian husbands and wives need feel no hesitation in offering their decision humbly to God and following it with a clear conscience. The *means* of family planning are in large measure matters of clinical and aesthetic choice, subject to the requirement that they be admissible to the Christian conscience. Scientific studies can rightly help, and do, in assessing the effects and the usefulness of any particular means; and Christians have every right to use the gifts of science for proper ends."

There are other problems to be considered in this connection. Christians are deeply concerned about the moral problems of sex relations before marriage, and outside of the marriage bond. From the Christian viewpoint both are violations of God's will as expressed in the moral law. Advocacy of the use of contraceptives by married couples is not an endorsement of promiscuity among the unmarried.

Nor can we condone the practice of abortion, which is known to be widespread in today's world as a means of preventing the birth of unwanted children. The practice of abortion is a moral as well as a medical and legal problem. Christian conscience cannot approve of abortion as a means of family planning, for it violates personality and involves the destruction of human life.

Another method of controlling conception is sterilization. In some countries voluntary sterilization is endorsed by government, and it has been accepted by some parents who desire to limit the size of their families. In the United States it is sometimes performed with the written consent of husband and wife when the

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**Responsible Parenthood and the Population Problem*, Report of a Special Ecumenical Study Group, Mansfield College, Oxford, 12–15, April 1959, p. 5, Para. 16.

latter's health seems to require it. The whole subject of sterilization is in need of careful study. It should be approached with sympathetic understanding of those factors which make the use of mechanical contraceptives most difficult.

In light of the foregoing considerations we hold that responsible family planning is today a clear moral duty. We believe that public law and public institutions should sanction the distribution through authorized channels of reliable information and contraceptive devices. Laws which forbid doctors, social workers and ministers to provide such information and service are infringments of the rights of free citizens and should be removed from the statute books. Any hospital which receives public funds should permit doctors to provide all services they consider necessary.

Those who are responsible for international technical assistance programs should give serious and realistic consideration to the implications of the population explosion in many economically less developed countries. These countries find themselves in a dangerous economic situation because of the rapid decline in death rates brought about by international assistance in medicine and public health. A foreign aid program which has helped lower the death rate must also be concerned with a rising birth rate. Yet countries which desire to reduce the resultant population pressure through the encouragement of family planning are receiving little or no assistance on the technical problems involved. This situation imperils their development programs. There is little hope for the success of such efforts unless birth rates are reduced. Therefore those responsible for international technical assistance programs should include family limitation helps to those governments requesting them.

We call upon the members of our churches, voluntary agencies, and the government of the United States of America to give serious consideration and active support to these principles.

(Whereupon, at 11:25 a.m., the hearing in the above entitled matter was recessed to reconvene on Wednesday, February 9, 1966.)

POPULATION CRISIS—1966

WEDNESDAY, FEBRUARY 9, 1966

U.S. SENATE,
SUBCOMMITTEE ON FOREIGN AID EXPENDITURES,
COMMITTEE ON GOVERNMENT OPERATIONS,
Washington, D.C.

The subcommittee met at 9:05 a.m., pursuant to notice, in room 3302, New Senate Office Building, Senator Ernest Gruening (chairman of the subcommittee) presiding.

Present: Senator Gruening.

Also present: Joseph Lippman, staff director; Herbert W. Beaser, chief counsel; Laura Olson, special consultant on population problems; Carole Ransom, editor; and Mary A. Miller, clerk.

Senator GRUENING. The meeting will please come to order. Before proceeding with my opening statement, a photograph taken today of our distinguished witnesses will be placed in the record at this point.

EXHIBIT 27

Witnesses who testified on S. 1676 before the Subcommittee on Foreign Aid Expenditures, February 9, 1966, were: Mrs. Theodore F. Wallace, Mr. James MacCracken, Dr. Raymond Ewell, Dean William E. Moran, Jr. (Pictured, left to right: Senator Ernest Gruening, chairman, Dr. Ewell, Mr. MacCracken, Mrs. Wallace, and Dean Moran.)

OPENING STATEMENT OF THE CHAIRMAN

Senator GRUENING. Since the Subcommittee on Foreign Aid Expenditures held its 17th hearing on S. 1676 on January 26, President Johnson has stressed the importance of solving the population explosion in his foreign aid program message to the Congress on February 1, 1966, and again in his February 2, 1966, message containing the International Education and Health Acts of 1966.

In his foreign aid message the President said that the citizens of many developing nations walk in the shadow of misery and he listed as one of the causes the fact that "at the present rates of growth, population will double before the year 2000."

PRESIDENT JOHNSON CALLS FOR "BOLD AND DARING" RESPONSE

President Johnson said this, coupled with the facts that half the adults of the developing nations have never been to school, that over half of the people are hungry or malnourished, and that food production per person is falling—

. . . are the dominant facts of our age.
They challenge our own security.
They threaten the future of the world.

The President said our response must be bold and daring and go to the root causes of misery and unrest to build a firm foundation for progress, security, and peace.

Five times in his foreign aid message the President commented on the population problem, bringing to 12, as of February 1, 1966, his specific comments in this area since he took office after the election a year ago last month.

PROPOSES CAREER HEALTH SERVICE

On February 2 he again discussed the population dilemma in his International Education and Health Acts of 1966.

Of specific interest to us today are his remarks concerning health which begin:

The well-being of any nation rests fundamentally upon the health of its people.
If they are cursed by disease, their hopes grow dim.
If they are plagued by hunger, even the blessings of liberty give little comfort.
We have committed ourselves for many years to relieving human suffering. Today our efforts must keep pace with a growing world and with growing problems.
Therefore, I propose a program to—
Create an International Career Service in Health;
Help meet health manpower needs in developing nations;
Combat malnutrition;
Control and eradicate disease;
Cooperate in worldwide efforts to deal with population problems.

He succinctly states that: ". . . food production has not kept pace with the increasing demands of expanding population."

CALLS FOR WORLDWIDE COOPERATION TO DEAL WITH POPULATION PROBLEMS

Further in his health message, in part 5, the President carefully spells out his proposal "to cooperate in worldwide efforts to deal with population problems." He seeks expanded research in human reproduction and population dynamics, enlargement of the training of American and foreign specialists in the population field, and assistance to family planning programs in nations which request such help.

I direct that at this time the full texts of the two Presidential messages be made a part of the hearing record on S. 1676 because they are most pertinent to our cause.

(The Presidential messages referred to, H. Doc. 374 and H. Doc. 375, follows:)

89TH CONGRESS } HOUSE OF REPRESENTATIVES { DOCUMENT
2d Session } { No. 374

FOREIGN AID

MESSAGE

FROM

THE PRESIDENT OF THE UNITED STATES

RELATIVE TO

FOREIGN AID

FEBRUARY 1, 1966.—Referred to the Committee on Foreign Affairs and ordered to be printed

To the Congress of the United States:

I recommend a foreign aid program to help those nations who are determined to help themselves.

I recommend a program to help give the people of the less developed world the food, the health, the skills, and education—and the strength—to lead their nations to self-sufficient lives of plenty and freedom.

I propose to carry forward the best of what we are now doing in the less developed world, and cut out the worst. I also propose to make the basic changes the times demand.

My recommendations are grounded in the deep conviction that we must use foreign assistance to attack the root causes of poverty. We must concentrate on countries not hostile to us that give solid evidence that they are determined to help themselves.

This is the lesson of the past. It is the hope for the future. It is the guiding principle for a nation ready and willing to cooperate with the industrious, but unwilling to subsidize those who do not assume responsibility for their own fate.

During the past year I have given our foreign assistance program the most sober and searching review. I have questioned the merit of each program. Special groups have concentrated on the particular areas of food, education, and health. A Cabinet committee has examined the details of our general economic and military assistance.

Thus, the steps I recommend today have been developed in the light of advice from senior officials in the executive branch, congressional leaders, and experienced advisers from outside Government. They also have been developed with full recognition of our balance-of-payments situation. They emerge from a rigorous examination of our past experience. They are informed by compassion and shaped by the history of two decades. They are the proof of our devotion to the works of peace. They reflect our vision of a world free from fear and ripe with opportunity. They will shape the legacy we leave our children.

I

The quest for peace is as old as mankind.

For countless centuries man struggled to secure first his home, then his village, then his city. It is the unique heritage of our century that men must strive for a secure world.

Peace, plenty, freedom—our fathers aspired to these as we do now. But the fateful truth of our age is that all our personal and national hopes hang in a balance affected by events and attitudes half a world away.

We have paid a fearful price to learn the folly of isolation. We have learned that the human misery which infects whole nations with a thirst for violent change does not give way to mere slogans. We have learned that the works of peace require courage and foresight. The need knows neither national boundary nor narrow ideology.

We have demonstrated this understanding in many ways over the past two decades. Our military strength has protected many countries threatened by invasion from without or subversion from within. Our economic assistance programs have rebuilt Europe. We have helped untold millions to gain confidence in peaceful progress, where there has been neither peace nor progress for centuries.

We will never know how many crises have been averted, how much violence avoided, or how many minds have been won to the cause of freedom in these years. But I believe we have many such achievements to our credit.

Yet today the citizens of many developing nations walk in the shadow of misery: half the adults have never been to school; over half the people are hungry or malnourished; food production per person is falling; at present rates of growth, population will double before the year 2000.

These are the dominant facts of our age. They challenge our own security. They threaten the future of the world.

Our response must be bold and daring. It must go to the root causes of misery and unrest. It must build a firm foundation for progress, security, and peace.

II

Although we recognize the shortsightedness of isolation, we do not embrace the equally futile prospect of total and endless dependence. The United States can never do more than supplement the efforts of the developing countries themselves. They must supply most of the capital, the know-how—and the will to progress. If they do, we can and will help. If they do not, nothing we can supply will substitute. Nothing can replace resources wasted in political or military adventures.

For the essence of economic development is work—hard, unremitting, often thankless work. Most of it must be done by the people whose futures and whose children's futures are directly at stake.

Only these people and their leaders can—

Invest every possible resource in improved farming techniques, in school and hospital construction, and in critical industry;

Make the land reforms, tax changes, and other basic adjustments necessary to transform their societies;

Face the population problem squarely and realistically;

Create the climate which will attract foreign investment, and keep local money at home.

These are just a few of the steps on the road to modernization. They are far from easy. We would do well to remember how difficult many of them were for us. But they are absolutely necessary. Without them, outside help is wasted. Neither we nor they can afford waste, and we will not continue any partnership in which only we recognize that fact.

As I said last October, "Action, not promises, will be the standard of assistance." It must be clear that the principle of our assistance is cooperation. Those who do not fulfill their commitments to help themselves cannot expect help from us.

III

In this spirit of cooperation, I propose that the United States offer to join in new attacks upon the root causes of world poverty.

The incessant cycle of hunger, ignorance, and disease is the common blight of the developing world. This vicious pattern can be broken. It must be broken if democracy is to survive.

The problem of hunger is a continuing crisis. In many parts of the world we witness both the ravages of famine born of natural disaster and the failure of food production to keep pace with rising needs.

This is a catastrophe for all of us. It must be dealt with by all who can help. In many other countries food output is also falling behind population growth. We cannot meet the world food needs of the future, however willing we are to share our abundance. Nor would it serve the common interest if we could.

The solution is clear: an all-out effort to enable the developing countries to supply their own food needs, through their own production or through improved capacity to buy in the world market.

I will shortly send to the Congress a special message which will recommend new legislation to redirect and strengthen our food aid programs to induce greater agricultural self-help abroad; make food aid a more integrated element of general programs of economic cooperation; and move as quickly as our mutual interest permits toward harder financial terms, thereby adding to our commercial markets and a favorable balance-of-payments result.

In addition, I propose that the Agency for International Development increase its efforts in the field of agriculture by more than one-third, to a total of nearly $500 million. One-third of this total will finance imports of fertilizer from the United States. The remainder will finance transfer of American farming techniques, the most ad-

vanced in the world; improvement of roads, marketing, and irrigation facilities; establishment of extension services, cooperatives, and credit facilities; purchases of American farm equipment and pesticides; and research on soil and seed improvements.

These programs will also have long-range benefits for our own farmers. Higher incomes abroad mean greater exports for our highly efficient food producers.

To combat ignorance, I am proposing a major new effort in international education. I propose a 50-percent increase in AID education activities to a total of more than $200 million. Shortly I will transmit to the Congress a special message proposing an International Education Act which will commit the United States to a campaign to spread the benefits of education to every corner of the earth. Nothing is more critical to the future of liberty and the fate of mankind.

To fight disease, I will shortly propose an International Health Act which will provide for extensive new programs at home and abroad.

We now have the capacity to eliminate smallpox from the list of man's natural enemies; to eradicate malaria in the Western Hemisphere and in large areas of Africa and Asia; and to relieve much of the suffering now caused by measles, cholera, rabies, and other epidemic diseases.

I will propose a two-thirds increase in fiscal year 1967 in AID support of health programs, to a total of more than $150 million. In addition to financing disease eradication, we will step up our program to combat malnutrition. We will expand help to community water supply projects. We will finance the training of more doctors and nurses, needed for new health centers and mobile health units.

I also propose to provide nearly $150 million in food-for-work programs, and more than $100 million in contributions to international organizations to further support the war on hunger, ignorance, and disease.

IV

We stand ready to help developing countries deal with the population problem.

The United States cannot and should not force any country to adopt any particular approach to this problem. It is first a matter of individual and national conscience, in which we will not interfere.

But population growth now consumes about two-thirds of economic growth in the less developed world. As death rates are steadily driven down, the individual miracle of birth becomes a collective tragedy of want.

In all cases, our help will be given only upon request, and only to finance advisers, training, transportation, educational equipment, and local currency needs.

Population policy remains a question for each family and each nation to decide. But we must be prepared to help when decisions are made.

V

In many areas, the keys to economic and social development lie largely in the settling of old quarrels and the building of regional solidarity. Regional cooperation is often the best means of economic progress as well as the best guarantor of political independence.

I propose that we continue and enlarge our support of the institutions and organizations which create and preserve this unity.

Last April I pledged full U.S. support for regional programs to accelerate peaceful development in southeast Asia. We have already begun to implement this pledge by support to the Nam Ngum Dam in the Mekong Basin and to other projects.

In my legislative proposals, I am requesting new and specific authority to carry forward this support for regional progress. We must make it clear to friend and foe alike that we are as determined to support the peaceful growth of southeast Asia as we are to resist those who would conquer and subjugate it. These efforts in Asia will be further enhanced by the formation of the Asian Development Bank, which was the subject of my message to the Congress of January 18. I am confident that this Bank will be a major unifying force in the region, and a source of vital development capital invaluable to our mutual interests.

In Africa, we look forward to working closely with the new African Development Bank as its programs materialize.

We also look forward to progress toward an East African economic community and other subregional common markets on that massive continent. As these institutions and arrangements develop, the United States intends to make greater use of them as channels for our assistance. We will move in the direction of more regional administration of our bilateral programs.

We have recently extended our ongoing commitment to the Alliance for Progress, which includes strong support for the successful economic integration of Central America. The movement toward greater cooperation among all Latin American economies will gain momentum in the years ahead. It has our strong support.

The United States will support the proposal of the Inter-American Committee of the Alliance for Progress and the Inter-American Development Bank to establish a new fund for feasibility studies of multinational projects. These projects can be of enormous value to countries which share a river valley or another natural resource. They are sound combinations of good economics and good politics.

VI

I propose that the United States—in ways consistent with its balance-of-payments policy—increase its contributions to multilateral lending institutions, particularly the International Development Association. These increases will be conditional upon appropriate rises in contributions from other members. We are prepared immediately to support negotiations leading to agreements of this nature for submission to the Congress. We urge other advanced nations to join us in supporting this work.

The United States is a charter member and the largest single contributor to such institutions as the World Bank, the International Development Association, and the Inter-American Development Bank. This record reflects our confidence in the multilateral method of development finance and in the soundness of these institutions themselves. They are expert financiers, and healthy influences on the volume and terms of aid from other donors.

I propose that we increase our contributions to the United Nations development program, again subject to proportionate increases in

other contributions. This program merges United Nations technical assistance and preinvestment activities. It promises to be among the world's most valuable development instruments.

VII

We will expand our efforts to encourage private initiative and enterprise in developing countries. We have received very useful advice and guidance from the report of the distinguished Advisory Committee on Private Enterprise in Foreign Aid. Many of the recommendations of that report are now being put into effect.

We will review frankly and constructively with cooperating countries the obstacles to domestic and foreign private investment. We will continue to support elimination of inefficient controls; formation of cooperatives; training of labor and business leaders; and credit facilities and advisory services for small- and medium-sized farms and businesses.

The U.S. Government can do only a small part of the job of helping and encouraging businessmen abroad. We must rely more and more on the great reservoirs of knowledge and experience in our business and professional communities. These groups have already provided invaluable service and advice. We in Government must find ways to make even greater use of these priceless assets.

I propose to continue our support for the International Executive Service Corps and increase the AID authority to guarantee U.S. private investments in developing countries.

VIII

To signify the depth of our commitment to help those who help themselves, I am requesting 5-year authorizations for our military and economic aid programs.

For development loans and loans under the Alliance for Progress, this is merely a reaffirmation of the principle adopted by the Congress in 1961 and 1962. It will not impair the ability or the duty of the Congress to review these programs. Indeed, it will free the Congress from the burden of an annual renewal of basic legislation, and provide greater opportunity for concentration on policy and program issues.

Annual congressional consideration of both economic and military programs will be maintained through full annual presentations before the substantive committees, if they so desire, as well as through the annual appropriation process.

The military and economic authorization requests are contained in two separate bills. I believe this is a forward step in clarifying the goals and functions of these programs in the minds of the public and the Congress.

IX

I am requesting a total appropriation of $2.469 million in fiscal year 1967 to finance programs of economic cooperation. As in the last 2 years, I am requesting the absolute minimum to meet presently foreseeable needs, with the understanding that I will not hesitate to request a supplemental appropriation if a clear need develops.

67-785 O—66—pt. 1——13

AID TO VIETNAM

The largest single portion of my request—$550 million in supporting assistance—is to support our effort in Vietnam. Our help to the Government of Vietnam in carrying forward programs of village economic and social improvement is of crucial significance in maintaining public morale in the face of the horror of war. With the help of AID advisers, who often serve at great personal risk, the Vietnamese Government is patiently building the foundations of progress in the rural areas.

OTHER SUPPORTING ASSISTANCE

The remainder of my request—$197 million—is for aid to countries whose security is directly threatened. This is concentrated in programs for Laos, Korea, and Thailand. Each country is a key link in our defense system. Each lives in the shadow of great and hostile powers. Each is well worth the investment.

ALLIANCE FOR PROGRESS

I am requesting a total of $543 million in fiscal year 1967 appropriations for the countries cooperating in the Alliance for Progress. Of this total $88 million will be used to finance technical cooperation.

At the Rio Conference, the United States announced its intention to support this great hemispheric effort beyond 1971. Our ultimate goal is a hemisphere of free nations, stable and just—prosperous in their economics and democratic in their politics.

We can cite many indications of heartening progress:

In 1965 alone, Chile settled about 4,000 families on their own land, about as many as had acquired land during the preceding 35 years;

Brazil, as a result of courageous economic policy decisions, has reduced its rate of inflation, restored its credit, encouraged private investment, and modernized many of its economic institutions;

In only 2 years, the five members of the Central American Common Market have increased intramarket trade by 123 percent.

These are not isolated or exceptional examples. The keynote of the Alliance for Progress has always been self-help. The pattern of our assistance—65 percent of which is concentrated in Brazil, Chile, and Colombia—demonstrates our determination to help those who help themselves.

Most heartening of all, a new generation has risen to leadership in Latin America as the Alliance for Progress has taken hold. These young men and women combine a belief in democratic ideals with a commitment to peaceful change and social justice. We are happy to welcome them as leaders of great nations in the community of freedom.

DEVELOPMENT LOANS

Nine-tenths of the $665 million requested for this account is for five countries—India, Pakistan, Turkey, Korea, and Nigeria.

We have long recognized the importance to all the world of progress in the giant nations of south Asia. But in the past year we witnessed a tragic confrontation between India and Pakistan which forced us to

withhold all new assistance other than food. We will not allow our aid to subsidize an arms race between these two countries. Nor can we resume aid until we are reasonably certain that hostilities will not recur. The progress of reconciliation—first at the United Nations and then at Tashkent—holds promise that these two great countries have resolved on a course of peace. My request for development loan funds is made in the hope and belief that this promise will be fulfilled.

Turkey has continued her steady progress toward self-sustaining growth, and has remained a stanch NATO ally. She deserves our continued support.

Korea has made similar economic progress and has shown her dedication to the cause of freedom by supplying a full military division for service in Vietnam.

Nigeria has recently suffered a painful upheaval, but we are hopeful that she too will maintain her responsible and progressive course.

The uncertainties of world affairs permit no guarantees that these hopes will be fulfilled. But I do guarantee the Congress and the American people that no funds will be used in these or other countries without a clear case that such expenditures are in the interest of the United States.

TECHNICAL COOPERATION

This request—$231 million—will finance American advisers and teachers who are the crucial forces in the attack on hunger, ignorance, disease, and the population problem. The dollar total is relatively small. But no appropriation is more critical. No purpose is more central.

CONTRIBUTIONS TO INTERNATIONAL ORGANIZATIONS

I am requesting $140 million for these contributions in fiscal year 1967. The majority of these funds will support such efforts as the United Nations development program and the U.N. Children's Fund. The remainder represents our share of the cost of maintaining essential United Nations peacekeeping and relief activities in areas of tension and conflict.

OTHER

The remaining $142 million of my request is distributed among the contingency fund, AID administrative expenses, and support of American schools and hospitals abroad.

XII

In making these requests, I assure the Congress that every effort will be extended to minimize the adverse impact on our balance of payments. I think the record is proof of the sincerity of these commitments.

AID procurement policies have been tightened to the point that, with minor and essential exceptions, all funds appropriated to AID must be spent in the United States for American goods and services. As a result, offshore expenditures of AID funds declined from $1 billion in 1960 to $533 million in 1964.

Further steps have been taken. I now expect that the figure will drop to about $400 million in fiscal year 1967. Receipts are expected

to rise to $186 million in fiscal year 1967, yielding a net outflow of only $214 million.

XIII

I am transmitting the Military Assistance and Sales Act of 1966 as separate legislation. This new act will provide a 5-year authorization for the program which strengthens U.S. security by building the strength of others to deter and resist aggression.

The new act will provide—

Effective coordination between our economic and military programs.—I request the Congress to retain in the new act those provisions which place responsibility for continuous supervision and general direction of all military assistance programs in the Secretary of State.

Greater emphasis on self-help.—As with economic aid, we must condition our military aid upon commitments from recipients to make maximum contributions to the common defense.

Greater emphasis on civic action programs.—We shall give new stress to civic action programs through which local troops build schools and roads, and provide literacy training and health services. Through these programs, military personnel are able to play a more constructive role in their society, and to establish better relations with the civilian population.

Emphasis on training.—One of our most effective methods of building free world security is through the training provided foreign military personnel. Today, 8,500 foreign trainees come to this country each year and a similar number are trained at our service schools overseas. They return to their home countries with new professional skills and a new understanding of the role of the armed forces in a democratic society.

Continued shift from grant aid to military sales.—We will shift our military aid programs from grant to sales whenever possible—and without jeopardizing our security interests or progress of economic development. Military sales now exceed the dollar volume of the normal grant aid program. This not only makes a substantial favorable impact on the balance of payments, but it also demonstrates the willingness of our allies to carry an increasing share of their own defense costs.

* * *

I am requesting new obligational authority of $917 million for military assistance in fiscal year 1967. This is the bare minimum required if we are to keep our commitments to our allies and friendly armed forces to provide the equipment and training essential to free world defense.

The military assistance request for fiscal year 1967 does not include funds for support of South Vietnamese and other allied forces who are engaged in the crucial struggle for freedom in that country. Financing for this effort will come directly from Department of Defense appropriations.

Almost three-fourths of the total program will go to countries adjacent to the borders of Soviet Russia and Communist China. The armed forces of such countries as Greece, Turkey, Iran, and the Republics of China and Korea are effective deterrents to aggression.

The balance of the funds will strengthen the capacity to maintain internal security in countries where instability and weakness can pave the way for subversion.

XIV

Americans have always built for the future. That is why we established land-grant colleges and passed the Homestead Act to open our western lands more than 100 years ago. That is why we adopted the progressive programs proposed by Woodrow Wilson and Franklin Roosevelt. That is why we are building the Great Society. And that is why we have a foreign assistance program.

We extend assistance to nations because it is in the highest traditions of our heritage and our humanity. But even more because we are concerned with the kind of world our children will live in. It can be a world where nations raise armies, where famine and disease and ignorance are the common lot of men, where the poor nations look on the rich with envy, bitterness, and frustration; where the air is filled with tension and hatred. Or it can be a world where each nation lives in independence, seeking new ways to provide a better life for its citizens: a world where the energies of its restless peoples are directed toward the works of peace; a world where people are free to build a civilization to liberate the spirit of man.

We cannot make such a world in one message, in one appropriation, or in one year. But we can work to do this with this appropriation in this year. And we must continue to build on the work of past years and begin to erase disease and hunger and ignorance from the face of the earth.

But the basic choice is up to the countries themselves. If that choice is for progress, we can and we must help. Our help can spell the difference between success and stagnation. We must stand ready to provide it when it is needed and when we have confidence that it will be well used.

This is the price and the privilege of world leadership.

LYNDON B. JOHNSON.

THE WHITE HOUSE, *February 1, 1966.*

89TH CONGRESS } HOUSE OF REPRESENTATIVES { DOCUMENT
2d Session } { No. 375

INTERNATIONAL EDUCATION AND HEALTH

MESSAGE

FROM

THE PRESIDENT OF THE UNITED STATES

RELATIVE TO

INTERNATIONAL EDUCATION AND HEALTH PROGRAMS

FEBRUARY 2, 1966.—Referred to the Committee of the Whole House on the State of the Union and ordered to be printed

To the Congress of the United States:

Last year the Congress by its action declared: the Nation's No. 1 task is to improve the education and health of our people.

Today I call upon Congress to add a world dimension to this task.

I urge the passage of the International Education and Health Acts of 1966.

We would be shortsighted to confine our vision to this Nation's shorelines. The same rewards we count at home will flow from sharing in a worldwide effort to rid mankind of this slavery of ignorance and the scourge of disease.

We bear a special role in this liberating mission. Our resources will be wasted in defending freedom's frontiers if we neglect the spirit that makes men want to be free.

Half a century ago, the philosopher William James declared that mankind must seek "a moral equivalent of war."

The search continues—more urgent today than ever before in man's history.

Ours is the great opportunity to challenge all nations, friend and foe alike, to join this battle.

We have made hopeful beginnings. Many of the programs described in this message have been tested in practice. I have directed

our agencies of government to improve and enlarge the programs already authorized by Congress.

Now I am requesting Congress to give new purpose and new power to our efforts by declaring that—

Programs to advance education and health are basic building blocks to lasting peace.

They represent a long-term commitment in the national interest.

The Department of Health, Education, and Welfare is charged with a broad authority to help strengthen our country's capacity to carry on this noble adventure.

EDUCATION

Education lies at the heart of every nation's hopes and purposes. It must be at the heart of our international relations.

We have long supported UNESCO and other multilateral and international agencies. We propose to continue these efforts with renewed vigor.

Schooled in the grief of war, we know certain truths are self-evident in every nation on this earth:

Ideas, not armaments, will shape our lasting prospects for peace.

The conduct of our foreign policy will advance no faster than the curriculum of our classrooms.

The knowledge of our citizens is one treasure which grows only when it is shared.

International education cannot be the work of one country. It is the responsibility and promise of all nations. It calls for free exchange and full collaboration. We expect to receive as much as we give, to learn as well as to teach.

Let this Nation play its part. To this end, I propose to strengthen our capacity for international educational cooperation; to stimulate exchange with students and teachers of other lands; to assist the progress of education in developing nations; to build new bridges of international understanding.

I. TO STRENGTHEN OUR CAPACITY FOR INTERNATIONAL EDUCATIONAL COOPERATION

Our education base in this country is strong. Our desire to work with other nations is great. But we must review and renew the purpose of our programs for international education. I propose to—

(1) *Direct the Secretary of Health, Education, and Welfare to establish within his Department a Center for Educational Cooperation.*—This Center will be a focal point for leadership in international education. While it will not supplant other governmental agencies already conducting programs in this field, it will—

Act as a channel for communication between our missions abroad and the U.S. educational community;

Direct programs assigned to the Department of Health, Education, and Welfare;

Assist public and private agencies conducting international education programs.

(2) *Appoint a Council on International Education.*—Our commitment to international education must draw on the wisdom, experience, and energy of many people. This Council, to be composed of outstanding leaders of American education, business, labor, the professions, and philanthropy, will advise the Center for Educational Cooperation.

(3) *Create a Corps of Education Officers to serve in the U.S. Foreign Service.*—As education's representatives abroad, they will give sharper direction to our programs. Recruited from the ranks of outstanding educators, they will report directly to the ambassador when serving in foreign missions.

(4) *Stimulate new programs in international studies for elementary and secondary schools.*—No child should grow to manhood in America without realizing the promise and the peril of the world beyond our borders. Progress in teaching about world affairs must not lag behind progress made in other areas of American education.

I am directing the Secretary of Health, Education, and Welfare to earmark funds from title IV of the Elementary and Secondary Education Act of 1965 so that our regional education laboratories can enrich the international curriculums of our elementary and secondary schools.

(5) *Support programs of international scope in smaller and developing colleges.*—Many of our Nation's institutions have been unable to share fully in international projects. By a new program of incentive grants administered through HEW these institutions will be encouraged to play a more active role.

(6) *Strengthen centers of special competence in international research and training.*—Over the past two decades, our universities have been a major resource in carrying on development programs around the world. We have made heavy demands upon them. But we have not supported them adequately.

I recommend to the Congress a program of incentive grants administered by HEW for universities and groups of universities—

(*a*) To promote centers of excellence in dealing with particular problems and particular regions of the world.

(*b*) To develop administrative staff and faculties adequate to maintain long-term commitments to overseas educational enterprises.

In addition, I propose that AID be given authority to provide support to American research and educational institutions, for increasing their capacity to deal with programs of economic and social development abroad.

II. TO STIMULATE EXCHANGE WITH THE STUDENTS AND TEACHERS OF OTHER LANDS

Only when people know about—and care about—each other will nations learn to live together in harmony. I therefore propose that we—

(1) *Encourage the growth of school-to-school partnerships.*—Through such partnerships, already pioneered on a small scale, a U.S. school may assist the brick-and-mortar construction of a sister school in less developed nations. The exchange can grow to include books and equipment, teacher and student visits.

To children, it can bring deep understanding and lasting friendships. I recommend a goal of 1,000 school-to-school partnerships.

This program will be administered by the Peace Corps, in cooperation with AID, particularly its partners of the Alliance program. The chief cost will be borne by the voluntary contributions of the participating schools.

(2) *Establish an exchange Peace Corps.*—Our Nation has no better ambassadors than the young volunteers who serve in 46 countries in the Peace Corps. I propose that we welcome similar ambassadors to our shores. We need their special skills and understanding, just as they need ours.

These "volunteers to America" will teach their own language and culture in our schools and colleges. They will serve in community programs alongside VISTA volunteers. As our Peace Corps volunteers learn while they serve, those coming to the United States will be helped to gain training to prepare them for further service when they return home.

I propose an initial goal of 5,000 volunteers.

(3) *Establish an American Education Placement Service.*—We have in the United States a reservoir of talent and good will not yet fully tapped:

School and college teachers eager to serve abroad;

Professors and administrators who are retired or on sabbatical leave;

Peace Corps volunteers who desire further foreign service.

To encourage these men and women to assist in the developing nations and elsewhere, I recommend that we establish an American Education Placement Service in HEW. It will act as an international recruitment bureau for American teachers, and will provide supplemental assistance for those going to areas of special hardship. In time, I hope this Service will lead to the development of a World Teacher Exchange—in which all nations may join to bring their classrooms into closer relationship with one another.

III. TO ASSIST THE PROGRESS OF EDUCATION IN DEVELOPING NATIONS

To provide direct support for those countries struggling to improve their education standards, I propose that we—

(1) *Enlarge AID programs of education assistance.*—In my message on foreign assistance, I directed AID to make a major effort in programs of direct educational benefit. These will emphasize teacher training, vocational and scientific education, construction of educational facilities, specialized training in the United States for foreign students, and help in publishing badly needed textbooks.

(2) *Develop new techniques for teaching basic education and fighting illiteracy.*—Our own research and development in the learning process can be adapted to fit the needs of other countries. Modern technology and new communications techniques have the power to multiply the resources available to a school system.

I am calling on HEW to support basic education research of value to the developing nations.

I am requesting AID to conduct studies and assist pilot projects for applying technology to meet critical education shortages.

(3) *Expand U.S. Summer Teaching Corps.*—The Agency for International Development now administers programs for American teach-

ers and professors who participate in summer workshops in less developed countries. They serve effectively to support teacher training in these countries. They also enrich their own teaching experience.

I propose this year that AID double the number of U.S. participants in the Summer Teaching Corps.

(4) *Assist the teaching of English abroad.*—Many of the newer nations have a vital need to maintain English as the language of international communication and national development. We must help meet this demand even as we extend the teaching of foreign languages in our own schools.

I have directed AID, supported by other agencies, to intensify its efforts for those countries which seek our help.

(5) *Establish binational educational foundations.*—We have at our disposal excess foreign currencies in a number of developing nations. Where conditions are favorable, I propose that significant amounts of these currencies be used to support binational educational foundations. Governed by leading citizens from the two nations, they would have opportunities much like those afforded major foundations in the United States to invest in basic educational development.

To the extent further currencies are created by our sales of agricultural commodities abroad, I propose that a portion be earmarked for educational uses, particularly to assist technical training in food production.

IV. TO BUILD NEW BRIDGES OF INTERNATIONAL UNDERSTANDING

The job of international education must extend beyond the classroom. Conferences of experts from many nations, the free flow of books and ideas, the exchange of works of science and imagination can enrich every citizen. I propose steps to—

(1) *Stimulate conferences of leaders and experts.*—I have directed every department and agency to support a series of seminars for representatives from every discipline and every culture to seek answers to the common problems of mankind.

We are ready to serve as host to international gatherings. I have therefore called on the Secretary of State and the Attorney General to explore ways to remove unnecessary hindrances in granting visas to guests invited from abroad.

(2) *Increase the flow of books and other educational material.*—I recommend prompt passage of legislation to implement the Florence agreement and thus stimulate the movement of books and other educational material between nations. This agreement was signed by representatives of the U.S. Government in 1959 and ratified by the Senate in 1960. This necessary congressional action is long overdue to eliminate duties and remove barriers for the importation of educational materials.

I also recommend that Congress implement the Beirut agreement to permit duty-free entry of visual and auditory materials of an educational, scientific, or cultural nature.

Finally, we must encourage American private enterprise to participate actively in educational exchange. I urge the Congress to amend the U.S. Information and Educational Exchange Act of 1948 to permit improvements in the informational media guarantee program.

(3) *Improve the quality of U.S. schools and colleges abroad.*—We have a potentially rich resource in the American elementary and

secondary schools and colleges overseas assisted by the Department of State and AID.

They should be showcases for excellence in education. They should help make overseas service attractive to our own citizens. They should provide close contact with students and teachers of the host country.

I request additional support to assist those institutions which meet these standards.

(4) *Create special programs for future leaders studying in the United States.*—There are some 90,000 foreign students now enrolled in U.S. institutions. Many of them will someday play leading roles in their own countries. We must identify and assist these potential leaders.

I recommend that HEW and AID provide grants to enrich their educational experience through special courses and summer institutes.

Health

The well-being of any nation rests fundamentally upon the health of its people. If they are cursed by disease, their hopes grow dim. If they are plagued by hunger, even the blessings of liberty give little comfort.

We have committed ourselves for many years to relieving human suffering. Today our effort must keep pace with a growing world and with growing problems. Therefore, I propose a program to—

Create an international career service in health;

Help meet health manpower needs in developing nations;

Combat malnutrition;

Control and eradicate disease;

Cooperate in worldwide efforts to deal with population problems.

1. Create an international career service in health

The first requirement of an international health program is trained manpower. I propose to—

(1) *Increase the supply of trained Americans.*—I recommend a program of Public Health Service grants to our universities and professional schools. Our first-year goal will be to increase by at least 500 the number of graduate students preparing to participate in international health activities.

(2) *Establish a select corps of international health associates.*—The Public Health Service will recruit young professionals in the health disciplines to be available for assignments at home and overseas. Through service with AID, the Peace Corps, and international organizations, they will gain experience as the first step in building careers in international health.

I recommend recruitment of 100 outstanding young Americans to be the freshman class of international health associates.

(3) *Establish a program of fellows in international health.*—I propose that 50 special fellowships be awarded to the best qualified young Americans with previous experience overseas and demonstrated capacity for leadership. With the help of advanced training, they will prepare for ever more rewarding service in this challenging career.

(4) *Create an international corps in the Public Health Service.*—I have directed the Secretary of Health, Education, and Welfare to

build a career service corps competent to sustain the international health programs in which this country participates.

II. TO HELP MEET THE HEALTH MANPOWER NEEDS OF DEVELOPING NATIONS

In many countries, the struggle for better health is crippled by severe shortages not only of physicians but of all health workers—nurses, sanitarians, laboratory technicians, public health workers, health educators, hospital administrators, and others.

We must work for the day when each country will be able to train, in its own institutions, the health workers it needs. Meanwhile, we must assist in relieving critical manpower needs. Toward these ends I propose to—

(1) *More than double the present AID program to strengthen medical and health training institutions in the developing nations.*—This program supports construction of teaching and laboratory facilities, modernization of teaching materials and methods, and assignments of American faculty abroad.

(2) *Enable the Peace Corps to recruit and provide more volunteers for service in the health manpower programs of the developing nations.*—This will require an expanded recruitment effort, new programs of training, and an increased emphasis on health.

III. TO COMBAT MALNUTRITION

Last year, in a special message to Congress, I emphasized the cost of malnutrition to the developing nations. This cost is counted in stunted human and national growth.

Since then, we have done much to combat hunger. Today, our food-for-peace programs reach about 100 million people.

With our help, a number of countries have begun to establish self-sustaining programs to conquer malnutrition. Through international organizations—the Food and Agriculture Organization, UNICEF, the World Health Organization—we have added further resources to this struggle.

But food production has not kept pace with the increasing demands of expanding population.

Where food is scarce, babies, young children, and mothers are the first affected. By 1967, nearly 270 million of the world's children will suffer from malnutrition. The legions of the hungry will grow unless mankind acts to meet this peril.

This Nation must play a larger role in combating malnutrition, especially among the young. I propose to—

(1) *Establish a Head Start nutritional program* to increase the number of infants, children, and mothers receiving adequate diets under the food-for-peace program.

Our assistance currently reaches about 70 million children, 10 million of whom are under 5 years of age. Our goal must be to help the developing nations start or expand programs that will reach 150 million children within the next 5 years.

To overcome the most serious nutritional diseases, I have directed AID to enlarge its program for enriching milk and other food-for-peace commodities with vitamins and minerals.

(2) *Provide training in nutrition.*—The developing nations need trained manpower—professional, technical, and administrative—to carry out effective nutrition programs. I am requesting that Congress appropriate funds for AID to support training in the United States for nutrition specialists from the developing countries and to support training institutions that have been established in 27 nations.

(3) *Expand research on malnutrition.*—We need to know much more about the effects of nutritional deficiency; the cheapest and best ways to apply technological advances; and how to develop new, rich sources of protein. I am requesting funds for AID to expand basic and applied research in these areas.

IV. TO CONTROL AND ERADICATE DISEASES

In the rich nations, a healthy childhood is the birthright of most children. But in the poor nations, children die daily of diarrheal diseases and cholera. Smallpox, malaria, and yellow fever—all preventable diseases—drain the health of the people and the economy of the nation. Animal diseases destroy desperately needed food.

To launch a simultaneous and concerted attack upon these major infectious diseases, I propose that we initiate or enlarge programs to—

(1) *Eradicate malaria—within 10 years—from the Western Hemisphere, Ethiopia, Nepal, Jordan, the Philippines, Thailand, India, Pakistan, and Iran.*—The United States assists 15 malaria eradication programs now in progress. I am requesting additional funds to expand these programs, and thus bring freedom from this disease to more than 800 million people in the coming decade.

We will strengthen the Pan American Health Organization as coordinator of the hemispheric attack on malaria. We will support the efforts of the World Health Organization.

(2) *Eradicate small pox throughout the world by 1975.*—Toward this goal, we will continue our support for the World Health Organization and provide special AID support for 19 West African countries which have requested our assistance.

(3) *Reduce the hazard of measles.*—Measles, a relatively mild disease in our country, is virulent in others. It kills many children. It leaves others blind, deaf, or mentally retarded. AID and the Public Health Service have conducted a successful pilot project in measles immunization in Upper Volta. Since then, nearly all the neighboring West African countries have requested similar assistance. AID will expand its vaccination program to help those countries control measles within the next 5 years.

(4) *Develop the means to control cholera and diarrheal diseases in developing nations.*—Because cholera cannot yet be prevented, we must develop more effective means of control. Through our own research, through cooperative programs with Japan, and through continued assistance to the SEATO Cholera Research Center in East Pakistan, we will move actively to curb the outbreak of this dread disease.

Diarrheal disease, a major cause of infant death in the poor nations, is transmitted largely through contaminated water. Working directly with these nations and with international organizations, AID will expand worldwide programs to insure safe water supplies.

(5) *Control animal diseases.*—Control or eradication of animal diseases could increase the meat supply by more than 25 percent in a

number of developing nations. As many as three-fourths of the rural population suffer from debilitating diseases that originate in animals.

I am requesting funds to support the Pan American Health Organization in developing and testing vaccines against rabies and foot-and-mouth disease. In addition, we will support PAHO as it initiates and expands control measures against foot-and-mouth disease in several Latin American countries.

(6) *Expand United States-Japan science cooperation.*—In 1965 we joined Japan in a cooperative science program to combat some of the major diseases of Asia—leprosy, parasitic diseases, tuberculosis, cholera, and malnutrition. I am requesting funds to expand this important venture administered through the Department of Health, Education, and Welfare.

V. TO COOPERATE IN WORLDWIDE EFFORTS TO DEAL WITH POPULATION PROBLEMS

By 1970, there will be 300 million more people on this earth. A reliable estimate shows that at present rates of growth the world population could double by the end of the century. The growing gap—between food to eat and mouths to feed—poses one of mankind's greatest challenges. It threatens the dignity of the individual and the sanctity of the family.

We must meet these problems in ways that will strengthen free societies—and protect the individual right to freedom of choice.

To mobilize our resources more effectively, I propose programs to—

(1) *Expand research in human reproduction and population dynamics.*—We are supporting research efforts through the Department of Health, Education, and Welfare, AID, and the World Health Organization. I am requesting funds to increase the pace and scope of this effort. The effort, to be successful, will require a full response by our scientific community.

(2) *Enlarge the training of American and foreign specialists in the population field.*—We are supporting training programs and the development of training programs through the Department of Health, Education, and Welfare and AID. We will expand these programs at home and abroad.

(3) *Assist family planning programs in nations which request such help.*—Here at home, we are gaining valuable experience through new programs of maternal and infant care as well as expansion of private and public medical care programs. Early last year we made clear our readiness to share our knowledge, skill, and financial resources with the developing nations requesting assistance. We will expand this effort in response to the increasing number of requests from other countries.

The Choice We Must Make

We call on rich nations and poor nations to join with us—to help each other and to help themselves. This must be the first work of the world for generations to come.

For our part, the programs in international education and health I am recommending this year will total $524 million:

$354 million in the foreign assistance program.

$103 million in the Health, Education, and Welfare Department program.

$11 million in the Peace Corps program.

$56 million in the State Department cultural and education program.

As I indicated in my message on foreign assistance yesterday, these programs will be conducted in a manner consistent with our balance-of-payments policy.

Last fall, speaking to a gathering of the world's scholars at the Smithsonian Institution, I said: "* * * We can generate growing light in our universe—or we can allow the darkness to gather."

In the few months since then, 44 million more children have come into the world. With them come more hunger—and more hope.

Since that time the gross national product of our Nation has passed the $700 billion mark.

The choice between light and darkness, between health and sickness, between knowledge and ignorance, is not one that we can ignore.

The light we generate can be the brightest hope of history. It can illuminate the way toward a better life for all. But the darkness—if we let it gather—can become the final, terrible midnight of mankind.

The International Education and Health Acts of 1966 present an opportunity to begin a great shared adventure with other nations.

I urge the Congress to act swiftly for passage of both measures.

Our national interest warrants it.

The work of peace demands it.

LYNDON B. JOHNSON.

THE WHITE HOUSE, *February 2, 1966.*

Senator GRUENING. So on 16 occasions, beginning in his state of the Union address in 1965, President Johnson has commented on the population explosion. He has not faltered. Nor will the Subcommittee on Foreign Aid Expenditures falter in its efforts to make birth control information available upon request in this Nation and in other countries.

I shall at this time direct that a speech made in Philadelphia on February 8, 1966, by Senator Joseph S. Clark, of Pennsylvania before the Planned Parenthood Association of Philadelphia be made a part of the hearing record. This speech was placed in the Congressional Record by our able colleague, the junior Senator from Maryland. Senator Tydings is a cosponsor of S. 1676 and last session testified at these hearings. His concern about overpopulation has been enormously encouraging to this subcommittee.

In his Philadelphia speech Senator Clark outlines the need for increased action by the Federal Government to make birth control information available to everyone upon request, and he summarizes some of the steps taken to help solve one of the most important problems of our time. He notes in his closing remarks, "This is no time to rest on one's oars."

EXHIBIT 30

SPEECH OF U.S. SENATOR JOSEPH S. CLARK, DEMOCRAT, OF PENNSYLVANIA, BEFORE THE ANNUAL LUNCHEON OF THE PLANNED PARENTHOOD ASSOCIATION OF PHILADELPHIA

[Congressional Record, Feb. 8, 1966, pp. 2438–39]

1

The duty of a politician is not to follow but to lead his constituents in seeking solutions to problems of public concern. But, if he wants to remain an active, rather than a former, public servant, he had better not get so far ahead of his public that he gets shot in the rear.

I have long been an active, if private, supporter of planned parenthood. To me the right to know what needs to be done to prevent the birth of unwanted children is one of the basic freedoms of a just and a compassionate society. To deny that right is unethical, immoral and wicked.

It was not until I was reelected to the Senate in 1962 that I had the courage to speak out. That fall, before the election, I promised my wife that if I won in November I would make my position clear early in the next year. It was not, however, until August 15, 1963, that I addressed the Senate on the topic "The Time Has Come To Speak Out on the Problem of Population Control."

I was, I believe, the first U.S. Senator to so speak out. Since that time I have been followed by Senators Gruening, Tydings, Bass, Bartlett, Byrd of West Virginia, Dominick, Douglas, Hart, McGovern, Moss, Simpson, Yarborough, and Young.

The support of Senator Philip Hart, of Michigan, born and brought up in Bryn Mawr, Pa., a Roman Catholic, the father of eight children and one of the most conscientious, high minded men in the Senate, is particularly heartening to me. I should also note that, upon his retirement from the Senate, Kenneth Keating, of New York, now a judge on the New York Court of Appeals, assumed the presidency of the Population Crisis Committee and, all through 1965, performed yeoman service in calling to the attention of the country the seriousness of the population crisis and the need to take prompt action to resolve it.

In the House of Representatives many Congressmen have also spoken up, among them Udall, Diggs, Moss, Conyers, Mackay, Brown, and Long.

Not all of these men, by any means, can be categorized as "starry-eyed liberals." A number of them usually follow conservative principles.

At the executive level, former President Eisenhower has spoken out, much to his credit, having reversed a stand he had previously taken. In a letter written June 22 of last year to Senator Gruening, who has been holding most useful hear-

ings on legislation to create executive secretaries for population in both the State and Health, Education, and Welfare Departments, President Eisenhower wrote:

"Unless something is done to bring an essential equilibrium between human requirements and available supply, there is going to be not only a series of riotous explosions but a lowering of the standards of all people, including our own. . . . I devoutly hope that necessary measures will be enacted into law . . . so . . . that human and material resources can be promptly mobilized and employed to cope effectively with the great need of slowing down and finally stabilizing the growth of the world's population."

President Johnson has been equally forthright on a number of ocasions. In his state of the Union message last year, he said:

"I will seek new ways to use our knowledge to help deal with the explosion in world population and the growing scarcity in world resources."

At the 20th anniversary of the United Nations at San Francisco on June 25, 1965, he said:

"Let us in all our lands—including this land—face forthrightly the multiplying problems of our multiplying populations and seek the answers to this most profound challenge to the future of all the world. Let us act on the fact that less than $5 invested in population control is worth a hundred dollars invested in economic growth."

The White House Conference on Health which met in Washington on November 3 and 4, 1965, had a panel on family planning which reported:

"There is wide general agreement that the time has come in this country to take definitive steps to make family planning services a part of routine medical practice and readily available to those who desire it—particularly those who have previously been unable to secure either information or service. All parts of government must take leadership in cooperation with private groups to establish and maintain family planning services with the understanding that there shall be no coercion and that there is a full freedom of choice of methods to be used in regulating pregnancy. This goal is believed to be in accord with the present wishes of a majority of people of all faiths, of all social and economic levels."

Assuredly, the climate of opinion toward the cause of planned parenthood has changed drastically in the last 3 years.

II

There has indeed been a breakthrough, which I date from the publication of Dr. John Rock's book, "The Time Has Come," early in 1963, with its introduction by former Secretary of State Christian Herter. As most of you know, Dr. Rock is a well-known Catholic professor emeritus of gynecology at the Harvard Medical School. The subtitle of his book is: "A Catholic Doctor's Proposals To End the Battle Over Birth Control."

In a review of Dr. Rock's book quoted in the New York Times on April 20, 1963, Richard Cardinal Cushing of Boston, who delivered the invocation at the inauguration ceremonies of President Kennedy in 1961, wrote:

"The Church is not opposed to birth control as such but to the use of artificial means to control births."

In a speech delivered before the Planned Parenthood Federation lunch at the Shoreham Hotel in Washington on May 8, 1963, Dr. Rock said that Catholic doctrine today is no obstacle to a massive program of Government action on the population problem; that many Catholic scholars are as concerned with the tragic consequences of over population and the encouragement of responsible parenthood as are non-Catholics; and that authoritative Catholic teaching encompassed a broad approach of toleration toward those areas of public policy on which there are remaining disagreements. He further stated that, while he did not expect the Catholic Church to reverse its longstanding opposition to artificial contraception, differences of religious approach did not mean that we must be paralyzed:

"In the event of such disagreements, the only democratic solution is enactment of laws and adoption of policies by each public body which respects the deeply held convictions of all groups. Such a policy would remove all restrictions on birth control in public agencies offering all methods so that communicants of all faiths can choose a method in accord with their beliefs."

As reported in the New York Times, June 24, 1965, Cardinal Cushing, speaking about the effort to repeal the Massachusetts birth control law which prohibited the sale of contraceptive devices said:

"I do not see where I have the obligation to impose my will on those who do not accept the faith I do."

There is now, I believe, and overwhelming consensus in this country—but not in this city—that both information and contraceptive devices should be made available to every human being who wishes to exercise his or her right to know how to prevent conception of an unwanted child. And this consensus includes an overwhelming majority of all three major religious groups, Protestants, Catholics, and Jews—including the inhabitants of this city—but not its leadership.

Recent polls show that 8 out of 10 Americans think birth control information should be made available to anyone who wants it. Two years ago, 53 percent of the Catholics interviewed were of this view; by last summer the percentage had increased to 78. These are national figures but there is no reason to think that the percentages are any different in Philadelphia. Planned parenthood clinics report that their clinics include Catholics in a number at least equal to their percentage in a particular community.

A survey conducted in the South by Dr. Joseph Beasley shows that three out of every four Negro women interviewed did not want any more children, but that more than half of them did not know how to stop having them. I suspect that Negro leaders who do not recognize this fact and act accordingly will not long remain the leaders of their people.

I like to think of myself as a practical politician. As such, I have no hesitation in telling you that espousal of the cause of planned parenthood is, in my judgment today, a political asset and not a liability. As Dr. Rock so cogently put it: The time has come to speak out.

III

Let's define more closely what we are talking about. We are concerned primarily with two matters; first, methods; and second, relations between church and state and private agencies. Would not the members of this organization agree with me?

First, that all tested and medically supported methods of voluntarily preventing conception should be made available to all married couples and also, under proper safeguards, to those unmarried mothers from underprivileged social groups who presently have no practical way, in view of the environment in which they live, of protecting themselves from the unwanted child.

Second, that dissemination of this information and the services required to make it effective should be supported not only by voluntary civic organizations such as yours but by the local, State, and Federal governments as well.

Third, that the program should be entirely voluntary, entirely without coercion and that those who have religious scruples should be free to reject the information if they so desire.

Fourth, that the program is an essential part of any successful war on poverty at home or abroad.

Fifth, that both at home and especially abroad, methods of curbing the presently excessive rate of population increase must promptly be put into effect to protect the well-being of the human race and perhaps, indeed, its very survival.

As President Johnson has said: "This cause is second only to the search for peace."

IV

It would be carrying coals to Newcastle to dwell at further length on the need for a program of population control. You are all aware of the basic facts. I shall mention only a few in passing:

As long ago as 1959, President Eisenhower's Committee, chaired by William H. Draper, Jr., reported:

"A large part of the world population is at present underfed. World food production is barely keeping pace with the increase in population in the world. However, the increase in food production in most of the underdeveloped countries has been falling behind the increase in population.

"Unless the relationship between the present trends of population growth and food production is reversed, the already difficult task of economic development will become a practical impossibility.

"In many countries, national production is failing even to keep pace with population growth, and per capita gross national product and food supplies are decreasing rather than increasing."

The Committee on Population for the International Cooperation Year, chaired by former Deputy Assistant Secretary of State Richard Gardner, and meeting

in Washington in November 1965, concluded that an annual appropriation of $100 million for the next 3 years would be required to prevent the population explosion from becoming a threat to both the United States and the underdeveloped portions of the world—a threat which would, in the first instance, undermine our continuing prosperity and, in the second, create widespread hunger and famine. It has been reliably estimated that there are 4,500,000 women in poor families now who are being denied an opportunity to make personal choices on family size because they don't have the money to pay for birth control information and services. With a population of 190 million—plus today, the United States is growing at the rate of around 1.6 percent, double that of most European nations. If this pace continues there will be upwards of 350 million of us by the turn of the next century. In less than two centuries, if the present rate continues, the population in the United States would surpass the present world population of 3.3 billion persons.

David Lilienthal, in a perceptive article in the New York Times Sunday magazine for January 9, 1966, acknowledging that he had previously been wrong in not supporting the planned parenthood program, stated:

"An additional 100 million people will undermine our most cherished traditions, erode our public services, and impose a rate of taxation that will make current taxes seem tame.

"There comes a point at which a change in quantity becomes a change in quality—when we can no longer speak of 'more of the same.' And another 100 million people will, I fear, make just that change in the joy of life in America."

Mr. Lilienthal pointed out the disastrous effect on education, water pollution, air pollution and the distribution of electric power which such an increase in population would bring about. He also spoke eloquently of the relationship between population growth and the poor, the recent doubling of Federal aid to dependent children, the appearance of the third generation on our relief rolls and the close analogy between the burden of unwanted children among American impoverished and uneducated mothers and that experienced by mothers in underdeveloped countries.

"Government policies and private programs must make plain the kind of life we all face if economically comfortable families reproduce at rates they personally can afford. With equal urgency we must make plain the dangers if poor families have children in numbers they cannot afford."

And he concluded:

"What is needed is a far more drastic cut in the birth rate—a voluntary curtailment of the right to breed. . . . Confronted by the crisis of population growth, we must, at present appeal to private conscience for the sake of the general good."

I could continue almost indefinitely with further chapter and verse. But there is no need to convince the already converted.

V

The need is thus clear. What are we doing about it at the local, State, and Federal level? The Federal Government is presently authorizing a somewhat timid policy of granting assistance to community action agencies operating under the poverty program. Funds granted by the Office of Economic Opportunity can be expended only under strict regulations which forbid the provision of contraceptive devices or drugs to unmarried women or married women not living with their husbands. Program funds are not permitted to be used to announce or promote, through mass media, the availability of the family planning program funded by OEO.

Despite these restrictions, grants have been made in sums totaling around $700,000 to Oakland, Calif.; Corpus Christi, Tex.—a heavily Catholic community—Austin, and Travis Counties, Tex.; Buffalo, N.Y.; Nashville, Tenn.; Albuquerque, N. Mex.; York County, Pa.; Hidalgo County, Tex.; Floyd County, Ky.; Cincinnati, Ohio; Santa Barbara, Calif.; Washington, D.C.; Minneapolis, Minn.

OEO has also funded health programs, of which family planning services are a part, in Boone, N.C.; Rochester, N.Y.; St. Louis, Mo.; Tufts University, Boston; Detroit, Mich., and Atlanta, Ga.

At the State level, Arlin Adams, the secretary of welfare, has recently announced that family planning information and services will be made available to individuals on public assistance in Pennsylvania when requested. He stated

that his decision in this matter, a question of conscience, requiring considerable courage in the light of the climate at Harrisburg, had been cleared with Governor Scranton, who stated he had no objection to the secretary of welfare going ahead.

Here in Philadelphia we are running well behind the pack—a generation behind the thinking and action in more enlightened communities. Your fine organization has long been the ugly duckling, or perhaps the unwanted stepchild, of an otherwise generous community. Those who contribute thousands of dollars to the United Fund which denies admission to the Planned Parenthood Federation will only reluctantly drop an anonymous $10 bill in the lap of your devoted solicitors.

Last Saturday night Mrs. Clark and I attended a magnificent concert and ball at the Academy of Music and the Bellevue which raised, to the tune of 1,000 popping champagne corks, an enormous sum of money for that splendid old institution, the Academy of Music. We were delighted to participate in this thoroughly worthwhile enterprise. But I wonder how much money the expensively dressed women and their immaculately white-tie attired escorts are giving to this cause in whose support we are gathered here today.

So far, planned parenthood has been unable to agree with the community action committee on a plan to obtain Federal aid for services to the poverty program. The leaders of that program have told me that they are prepared to go forward as soon as an acceptable program is submitted to them. I would hope that further delay could be avoided and the show put promptly on the road. And I would further hope that some support for this vitally needed endeavor would be forthcoming from the power structure of this city, including the directors and trustees of the health and welfare council, the united fund, and the Greater Philadelphia movement.

Why should not the city health centers provide birth control information? How can they possibly justify their refusal to do so? Is it not time for Philadelphia to shake itself out of its lethargy and do something effective to minimize, if not prevent, the misery caused by the unwanted child and the denial of the right to know?

VI

There is a big job to be done in the Greater Philadelphia Metropolitan Area. We are over the ideological hump, the consensus of public opinion is with us. The logjam has broken; the road should be all downhill from here.

This is no time to rest on one's oars. The energy, the time, the support, and the finances to achieve the goals of the Planned Parenthood Federation of Philadelphia are all here, ready and willing to go to work. Let's not shrink from the task.

BARRY GOLDWATER SUPPORTS S. 1676

Senator GRUENING. The subcommittee was gratified to receive a letter from our former Arizona colleague, Barry Goldwater, expressing his support for S. 1676. It is a privilege to include the letter into the hearing record at this time.

EXHIBIT 31

LETTER FROM PRESIDENTIAL CANDIDATE AND FORMER SENATOR, BARRY GOLDWATER OF ARIZONA

SCOTTSDALE, ARIZ., *December 23, 1965.*

Hon. ERNEST GRUENING,
U.S. Senate,
Washington, D.C.

DEAR ERNEST: Mrs. Goldwater and I have been interested in birth control for many, many years, she having started the first clinic for that purpose in the state of Arizona. I have nothing which would add to the hearing up before your Committee but just know that you have my best interest and hopes.

Sincerely,

(S) Barry,
BARRY GOLDWATER.

Senator GRUENING. We have a distinguished list of witnesses today, and, as I understand it, Dean Moran has an engagement. I am going to ask him to come first.

Dean Moran, would you come forward?

The subcommittee has asked Dean Moran to contribute to the population dialog. At this time I will direct that his two-page biography be inserted in the hearing record and that his introduction to "Population Growth: Threat to Peace," as well as other relevant parts of the book appear at the conclusion of his testimony.

BIOGRAPHY: WILLIAM E. MORAN, JR.

William E. Moran, Jr., was born on January 8, 1916, in Herkimer, N.Y.

He was married on May 17, 1941, to Phyllis Marie Duffy. They have two children—William III, age 22, and Patricia, age 19.

Dean Moran received his A.B. from Syracuse University in 1937, and his LL.B. from Syracuse University's College of Law in 1940.

Since 1961 he has been dean of the School of Foreign Service, Georgetown University, Washington, D.C.

Dean Moran started his professional life as a special agent for the Federal Bureau of Investigation. During this time—from 1940 to 1945—he was stationed in Oklahoma City; Buffalo and Rochester, N.Y.; Baltimore, Md.; Washington, D.C.; and Seattle, Wash.

He was senior economic analyst in the Foreign Service Auxiliary in the U.S. Department of State, American Embassy, Brussels, Belgium, from 1945 to 1946.

He followed this as assistant to the Director of Security, Atomic Energy Commission. This assignment included 5 months' field experience in Eniwetok and other South Pacific areas. He was with Joint Task Force 7 from 1947 to 1949.

Dean Moran was assistant to the Director of the Marshall Plan Mission, Brussels, Belgium, Economic Cooperation Administration, from 1949 to 1952.

Mr. Moran moved back to become Chief of the Dependent Overseas Territories Branch of the Mutual Security Administration, Washington, D.C., in 1952.

He was named Director of the African Division of the Foreign Operations Administration in Washington, D.C., in 1953 and remained in this capacity until 1957.

In Rabat, Morocco, from 1957 to 1959, Dean Moran was Deputy Director for the U.S. Operations Mission, a part of the Foreign Operations Administration, then known as the International Cooperation Administration.

He moved to Menlo Park, Calif., as director of the African research program at Stanford Research Institute from 1959 to 1961.

Dean Moran has had extensive travel in the United States, Western Europe, and Africa.

He is president of the Catholic Association for International Peace; a member of the board and executive council for the Institution for Human Progress; a member of the board of the Population Reference Bureau; and a member of the Council on Foreign Relations, the Washington Institute for Foreign Affairs, the African Studies Association,

the Columbia University Seminars (Africa), the Council on Foreign Affairs (study group on Southern Africa), and the Society for International Development.

Dean Moran has lectured on Africa, socioeconomic development, foreign aid, foreign trade, and foreign economic policy at the Foreign Service Institute, Industrial College of the Armed Forces, National War College, and the Conference on Religion and International Affairs.

He has become a consultant to the National Planning Association on African and Latin American studies; on the Advisory Committee of the Bureau of African Affairs for the Department of State; and was a member of the organizing committee for the 1964 Annual Convention for the Society for International Development.

His publications include:

Handbook of African Economic Development (with Guy Benveniste), Praeger, August, 1962: New York.

New Approaches to Emerging Trade Problems, in Emerging Africa, edited by Wm. H. Lewis, Public Affairs Press, Washington, D.C.: 1963.

Transfer of Western Economic Institutions in Africa, in The Transfer of Institutions, edited by Wm. B. Hamilton, Duke University Press: 1964.

Tropical Africa and the World Economy, in Economic Development for Africa South of the Sahara, edited by E. A. G. Robinson, proceedings of the 1961 meeting of the International Economic Association, MacMillan & Co., New York: 1964.

The Layman in the Mission of the Church, in The New Missionary Church, edited by Frederick A. McGuire, C. M., Helicon, Baltimore: 1964.

Population Growth: Threat to Peace?, editor and contributor, Wisdom and Discovery Series, P. J. Kenedy: 1965.

Senator GRUENING. Dean Moran, we are very happy to have you here. Please proceed as you see fit.

STATEMENT OF WILLIAM E. MORAN, JR., DEAN, SCHOOL OF FOREIGN SERVICE, GEORGETOWN UNIVERSITY

Mr. MORAN. Thank you very much, Senator. I am very pleased to have been offered this opportunity.

I am dean of the School of Foreign Service at Georgetown University.

My interest in the question being considered by this committee stems from my experience both in research and in practice with the question of socioeconomic development over some 16 years. My interest is perhaps best reflected in the fact that I am vice president and secretary of the Population Reference Bureau and a member of the board of directors of the Population Crisis Committee.

S. 1676 HEARINGS AMPLY DEMONSTRATE "THE SCOPE AND DIMENSIONS OF THE PROBLEM WE FACE"

I have followed the hearings of the subcommittee with interest. I think the fact that we are faced at home and abroad with unprecedented sustained population increases has been clearly demonstrated in these hearings already and that the scope and dimensions of the problem we face has been amply demonstrated. I am in complete agreement that the rapid rates of population growth which have taken place thus far this century, and which can be reasonably anticipated

in the rest of this century, present us with a serious, even critical problem. Means must be found, morally acceptable to the persons involved, to reduce birth rates. This will not be done quickly, even under the most favorable circumstances. Meanwhile, we are already faced with the fact that a third, possibly even a half, of the world's population is inadequately fed and inadequately educated, clothed, sheltered, and provided for. We must, therefore, bend every effort to use our technology and resources to improve the lot of the mass of mankind already with us.

The problem we face is a staggering one. Our recognition of its urgency is very recent. We are probably 20 years late in that recognition. Hysteria and a search for panaceas will not serve us well in such a situation.

"A CHRISTIAN HUMANIST VIEWPOINT . . . DESERVES UGRENT CONSIDERATION . . ."

I do not feel that I am in any position to add to the demographic, scientific, and technological material which has been presented to this committee. I would rather like to supplement that information with a viewpoint which I think deserves the urgent consideration of this committee and our Government. This might be called a Christian humanist viewpoint. I say this viewpoint deserves urgent consideration because we are dealing with people, and if we are to respect our finest traditions, we must deal with them in such a way as to respect human dignity and human freedom. I am satisfied that if we treat this problem solely or even primarily from a statistical and technological standpoint we will fail.

TWO SETS OF PROBLEMS: A RAPID INCREASE IN POPULATION AND "HOW TO COPE WITH THE INCREASED NUMBERS OF PEOPLE"

We have recently entered an era that has been blessed with the knowledge that enables us to reduce mortality rates and increase the lifespan of man. It is this rather than any increase in birth rates which has given rise to the rapid increase in population which we now face. We did not foresee that developments so obviously good could create as a byproduct the serious problem of how to cope with the increased numbers of people which resulted from our actions. It is important to note how different are the two sets of problems.

We found it relatively cheap and easy to counter the threat of death. Improvement in water supplies and other sanitary conditions, inoculation, vaccination, spraying insects, and the use of modern wonder drugs can be carried out at fairly limited expense by a fairly small number of trained individuals and demands very limited participation by the population concerned. Moreover, the universal fear of death has made it relatively easy to secure that minimum participation.

WE MUST ". . . RISK NEW APPROACHES TO LIFE" OR FACE DISASTER

On the other hand, a substantial worldwide increase in the production of food and fiber, the social and political change necessary to a

better distribution of the increased production, and reduction in the birth rate are much less easy to achieve. They can only be brought about if tens, even hundreds of millions of individuals can be induced to change traditional ways, understand complex problems and risk new approaches to life. There is nothing like the universal fear of death available at hand to help us to stimulate people to such an effort. The desire for better living conditions may help induce people to take steps to meet the first two problems, increase production and improve distribution. There is no similar stimulus to help in reducing birth rates, and human attitudes are such as to tend to impede efforts in this direction. If masses of people are not brought to the necessary recognition and induced to the necessary effort, and very soon, we will shortly face disaster in some parts of the world—the Food and Agriculture Organization has recently warned that 100 million people are now on the verge of famine. In such circumstances, there is the danger that authoritarian measures will be resorted to with the resultant loss of human dignity and human freedom.

"AN ESSENTIAL PART OF THE PUZZLE . . . HAS BEEN OVERLOOKED"

All of this leads me to believe that despite the mass of material which has been presented to this committee, an essential part of the puzzle before the world has been overlooked. This sector of the overall problem lies in the sociological and psychological area. It is concerned with the understanding of man and how he can be brought to change his habits voluntarily. Essential research is necessary to reveal the implications for man and society of various proposed courses of action. We have not done nearly enough of the research in these areas to provide us with the answers we so badly need.

"THIS IS NO MERE TECHNICAL PROBLEM"

I would like to reemphasize that I agree there is a very serious problem. I think it is a very complex problem. But, the mere recognition of it by a few of us in modern, industralized society is not enough. If we are to cope with the problem we will need deep understanding, a real willingness to change old habits, and responsible action by millions, tens of millions of people. This is no mere technical problem. We must find the means to communicate our concern and our understanding of means to these people in such a way that they understand and share our concern and take the necessary steps. We have not yet found this way or proven its effectiveness.

The United States and other nations, alone or in concert in the United Nations and regional organizations, have been carrying on programs of technical assistance and financial aid for 20 years or more. Through these programs we have been trying to help developing countries to improve their economic condition and the lot of their people. Yet we are told by the Food and Agricultural Organization and our own Agriculture Department that we have so far not been nearly successful enough in this endeavor and that food production in most of the world is not keeping pace with population growth and may soon fail to keep pace with population growth on a worldwide basis.

WE LACK KNOWLEDGE "OF HOW TO MOVE MAN TO THINK AND ACT IN NEW WAYS"

Success in our efforts to increase production and reduce population, for both are essential, will result only if man can be brought to understand his condition and induced to use new methods. Our lack of success does not result in any substantial way from a lack of knowledge of techniques, but rather from a lack of knowledge of how to move man to think and act in new ways. We few, in the advanced industrialized countries, cannot improve the lot of man throughout the world. We can at best help the 3 billion men and women in the world to improve their own lives. After 20 years or more of experience trying to help men improve their own lot under our programs of foreign aid, it is amazing how little we know as to how men are moved. We need a very substantial program of research. We have now the basis, in that 20 years or more experience, on which we could set up a program of applied research as to how men are induced to better understand their condition and to adopt new methods to improve it. It is shocking how little of this has been done. This is not unrelated to the problem of reducing population growth rates. If we knew how to induce a man to use a new kind of plow, we would probably be quite close to knowing how to induce him to use a pill. If man could be brought to understand how to use the calendar and climate changes to improve agricultural production, there should be no reason why he could not also be taught how to use the calendar and body temperature changes to use the rhythm method effectively to plan his family.

MAKE MARRIED COUPLES RESPONSIBLE IN THEIR PROCREATION

I am firmly convinced that the population problem is a human problem and will only be effectively attacked in terms commensurate with our traditions if it is done through making man more knowledgeable and putting him in a position to be responsible. I believe that our efforts should be to make married couples responsible in their procreation and in the raising of their children. So long as we have people here or abroad who are deprived, who lack a sense of hope, I am doubtful that the responsibility will be brought about through the expanded distribution of information and of materials for contraception.

I am not suggesting for a moment that I am opposed to such distribution of materials and information. I am only suggesting that I have a serious worry that it will not work unless more is done. We should not be surprised or shocked if people whom we believe should use such information and such material do not do so. We should rather recognize that they probably will not do so except in the context of improvements in their condition such as to make them responsible, knowledgeable, and interested. We have not begun here or abroad to understand this problem nor have we undertaken the necessary sociological and psychological research to begin to give us the tools to understand and work with these people effectively.

"EVERY TIME WE SOLVE ONE PROBLEM, WE CREATE A NEW ONE"

The problem is staggering, even frightening in complexity and magnitude. If we look at it statistically and technically, there is the

danger that we forget the very people whose lot we would improve. In our earnest desire to bring about change quickly, we propose solutions without adequate attention to their implications. We forget that every time we solve one problem, we create a new one. When dealing with a human person, it is important that we have a pretty clear idea about that new problem we create so that we may be sure that we do not leave man worse off rather than better. Just as examples, I would like to speak briefly about two proposals which have either been tentatively or specifically made in this connection.

In various States, suggestions have begun to be made that laws restricting or forbidding abortion should be changed. The American Medical Association in its latest meetings gave some consideration to this question.

There are some who propose that abortion should be legalized when birth would be a threat to the physical or psychological health of the mother. There are some who suggest that abortion should be legalized as a means of controlling population growth. There are others who fervently promote voluntary sterilization, particularly male sterilization, as a means of attacking the population problem. I am opposed to either such course of action on moral grounds. I would leave this aside here, because I would not expect my views on morality to be legislated or imposed in a pluralistic society such as ours.

I would rather ask the question as to what we know about what happens to a person who has one or more abortions for nontherapeutic reasons, that is, to avoid having a baby other than for health reasons, or to a person who has been sterilized. I would ask further what happens to a society, a substantial part of which is in such condition. My fear may be ill founded, but I do not think the question unreasonable.

I believe we need substantial, serious research on these questions before these or other irreversible techniques are proposed as means for the solution of the population problem.

"WE FACE A VERY SERIOUS PROBLEM"

In conclusion, I would like to reiterate my thanks to the committee for hearing me, and for all they have done to provide information concerning the magnitude of this question. I am in complete agreement that we face a very serious problem. I do not mean in what I have said to decry for a moment the fine efforts of the demographers, the scientists, and the medical doctors. I do wish to suggest, even to insist, that this is a human problem, that we know far too little about its ramifications from a psychological and sociological standpoint and that we run a grave danger of impairing human dignity and human freedom if we do not give more attention to the human aspect of the problem.

Thank you, sir.

Senator GRUENING. Dean Moran, this is a very thoughtful and a very constructive presentation that you have made. I know that the subcommittee is very grateful for it.

There are a number of things that I would like to discuss with you a little further.

The tone of your remarks is rather pessimistic and I believe quite soundly so. It is a tremendous problem, even if we go ahead with this kind of proposed legislation and proceed along the lines President

Johnson indicates he deems wise. The human problems that you stress are enormous.

AN IMPORTANT CHANGE ". . . WIDE RECOGNITION THAT THE PROBLEM EXISTS . . ."

But there is, I believe, a most important change that has taken place in this field, which is, first of all, the wide recognition that the problem exists. This recognition did not come until quite recently and as you and other witnesses know and point out, the change is really a direct result of scientific progress. The great discoveries in medicine, surgery, and therapeutics, the improvements in sanitation, have so altered the long existent close balance between the birth rate and the death rate that we now have this problem before us and suddenly we have recognized that we are confronted with it.

PROBLEM CAN NOW BE DISCUSSED

Now, concomitantly has come another change which is both important and gratifying, and that is that this problem can now be discussed; until very, very recently this was not the case, no public official would have dared discuss this without jeopardizing his future career. I am quite familiar with that myself, having tested this as a journalist in Boston in the past and finding immediate consequences that were not very encouraging.

I do feel, however, that the picture you paint of an uninformed society rejecting contraception because their conditions are miserable is not necessarily true everywhere.

IN PUERTO RICO INFORMATION ENTHUSIASTICALLY WELCOMED IN 1935

I can refer to my own experience in Puerto Rico as Administrator of the Puerto Rico Reconstruction Administration. We found in 1935 a tremendous unemployment and depression, with several hundred thousand people out of work. We went to work and initiated projects that greatly diminished unemployment, but we were confronted with the fact that while we were putting people to work the population growth there was outstripping all our efforts. I discussed this problem with the bishop, Bishop Joseph Byrne, who felt that it was all right for us to start maternal welfare clinics. Subsequently the administration in Washington caused us to stop using Federal funds for this purpose. But the clinics went on just the same with donated funds. Puerto Ricans continued these clinics, and we found that when these clinics were open and furnished contraceptive information, illiterate people, people with no education, flocked to them. People would come in eagerly. Mothers would come in and tell that they had eight or nine children of whom three or four had died, and that they welcomed the information they would get that would enable them to not have more children. They accepted very eagerly and enthusiastically what they felt could be done to bring this about, wanted to hear about it, and word was spread by word of mouth.

So, I think if you have a proper educational approach and a proper presentation to even the most uneducated, the most illiterate, you will find receptivity.

But you are right in stressing that this problem does require more understanding of the human aspects, and I believe the human reaction generally will be to welcome this relief.

ABORTION—"THIS TRAGIC AND DANGEROUS METHOD"

I would like to ask you one other thing. Your remarks on abortion are very pertinent. We have testimony that a million abortions take place in the United States every year. Women who become pregnant and seek this remedy, this tragic and dangerous method, should know, or should have known, that if they had had information—proper information about contraception—they would not have had to resort to this perilous, painful, and costly method.

"IF THE INFORMATION AND MEANS FOR CONTRACEPTION WERE UNIVERSALLY CIRCULATED, THERE WOULD BE FEWER ABORTIONS"

It seems to me that there is a moral issue which could very well be emphasized. Those who object to contraception as immoral should consider that contraception is merely the prevention of birth whereas abortion is the deliberate destruction of nascent life. It would seem to me that those who object to contraception on moral grounds should realize that a pregnant woman who seeks an abortion is a desperate woman or else she would not undergo the great risk and cost. Whether she is an unmarried woman who has become pregnant or whether she is a married woman who has had so many children that the economy of her family has broken down, that her health is impaired, that some of her children are deficient, or a combination of these reasons this is a desperate way out, and we should by all means do everything to stop it. It seems to me that the proper alternative is contraception. If the information and means for contraception were universally circulated, there would be fewer abortions.

What would be your thoughts on that subject?

Mr. MORAN. May I first refer to your first question, sir? I am sorry if I sound pessimistic. I do not mean to be pessimistic, but I think we have to face our problems very honestly.

IGNORANCE . . . IS . . . DAMAGING

May I just call to your attention the Saturday Evening Post for January 29, 1966, which has in the section called "Speaking Out" an article called "The White Man Can't Help the Black Ghetto," written by a Mr. Mark Battle, who is a specialist in the problems of Negro slum dwellers, himself a Negro, and a U.S. Labor Department Deputy Director of the War on Poverty. He says this:

> Ignorance about the ghetto is particularly damaging, when white Americans seek to deal with "chronic social ills." For instance, illegitimacy, the Negro illegitimacy rate is close to 25 percent; the white rate is less than 4 percent. The solution usually touted for the ghetto is birth control education. In fact, most Negro youngsters get practical information about contraceptives at elementary school education. No white girl would have an illegitimate child if she knew how to prevent conception, or marry the father. What rarely is considered is the Negro girl is likely trained to be contemptuous of Negro men and marriage may be the last thing she wants.

I throw this out as one piece of evidence.

I have had occasion to participate in meetings where I have found Negroes resentful of the idea of birth control as an answer to their problem, even saying: "What you would like to have is fewer Negroes." So I do think we do have a problem here.

I would like also in response to your first question to call attention to the book called "Blossoms in the Dust," a book written by an Indian sociologist, subtitled "Human Factors in Human Development." Miss Nair, a sociologist, made a study in the villages in every state but one in India—over a period of more than a year and a half—in an attempt to find out just what the Indian development plan did mean to the people, and what she found out was pretty discouraging.

STUDY SUCCESSES TO FIND EFFECTIVE METHODS OF EDUCATION

Now, I am not pessimistic. I think if we used our resources effectively, if we studied our experience in Puerto Rico, if we studied our experience in Formosa, where we have had some considerable success, and those other places where we have had success, either with improving the production of food and fiber and its distribution, or with reduction of birth rates, we might find those methods of education which would make it possible for us to make an effective approach to this problem.

All I am saying is I do not think we have done that part of the job nearly as well as we have done the scientific and technological research on birth control pills, intrauterine devices, and various other things. I think we need a lot more work on how people are brought about to realize that they are having too many children, that the children are suffering, and that they are suffering, and I propose we need the work. I am all for it.

WE ARE FINDING IN LATIN AMERICA TODAY A RECEPTIVITY TO THE IDEA OF FAMILY PLANNING

As to the second question, I agree with you completely. We are seeing this in our own country. As I understand it, we are seeing it even more in Latin America, where I think the Latin American people—the officials long were opposed to anything in the way of family planning, birth control clinics, and so forth—have over recent years become terribly shocked by the large number of abortions, by the large number of deaths from illegal abortions, or the large number of crippling accidents from such abortions. And I think this is one of the reasons we are finding in Latin America today a receptivity to the idea of family planning that we did not have even 2 or 3 years ago.

Certainly, I do not oppose the idea of family planning. I believe that man is or should be responsible in his procreation because he is taking on a terrible responsibility. I think man should be provided with means morally acceptable to him in his condition to be responsible.

Is that responsive, sir, to your question?

MORAN FAVORS S. 1676

Senator GRUENING. Yes, it is. Do you favor the enactment of Senate bill 1676?

Mr. MORAN. Yes, sir.

Senator GRUENING. You favor it.

Do you think there is any prospect of the church changing its position on the use of methods other than the rhythm method?

Mr. MORAN. I hesitate to respond to that question, sir, because I am not a member of the hierarchy or the clergy. I have not been personally involved in any way even in the papal commission which is studying it, and I hesitate to guess what Pope Paul might do.

POPE PAUL PUBLICLY CALLED THE POPULATION PROBLEM SERIOUS

I do know that he has stated publicly that this is a serious problem to which he will give the most serious attention, that he has set up a commission to advise him in all aspects of the problem. But I would hesitate to say what his response would be because I am not in a position to do so.

Senator GRUENING. Well, of course, there is a great hope, as you know, among Catholics that there will be a change—many of them have expressed that to me—and they are waiting hopefully, expectantly, for some modification, but so far there has been no sign of it.

Of course, the evidence is that the rhythm method is not very effective and it is very difficult for it to become effective for obvious reasons. At best it would require a great deal of self-control and a high degree of intelligence and determination, qualities which are not found too plentiful in human beings.

CATHOLIC CHURCH STUDYING REPRODUCTION AND RHYTHM

Mr. MORAN. I would suggest, sir, that we have had one step. It is only in recent years that the Catholic Church has accepted the rhythm method. This was at least a step forward and in some places Catholic organizations are doing everything they can to perfect this method, setting up not only research programs in human reproduction in order that we might better understand how it works and how it can be improved, but also setting up study groups of married couples to try to help them to find the means to use it effectively.

Senator GRUENING. Yes; I fully agree that acceptance of the rhythm method by the church is a great step forward because it is clearly implicit in that acceptance that the church favors family planning if it can be done by that method.

So, since the church approves of family planning by that method, maybe the transition to the next step, that of approving alternative and surer methods, will not be unattainable.

Thank you very much, Dean Moran. We appreciate your coming and giving us this fine statement.

Mr. MORAN. Thank you, sir.

(Insert previously mentioned follows:)

EXHIBIT 32

POPULATION GROWTH: THREAT TO PEACE*

(Edited by William E. Moran, Jr., P. J. Kenedy & Sons, 1965)

INTRODUCTION

The Catholic Association for International Peace has for thirty-seven years been studying problems related to peace in the world from a Christian standpoint. It has provided a forum for Catholic scholars interested in such issues. Its annual conference has traditionally explored in some depth an issue of current importance.

In preparing for the 37th Annual Conference, it was decided that rapid population growth in the world was an issue of critical importance and should be considered as a topic of the conference. Once the idea was broached there was little difficulty in seeing the necessity for its consideration by such a group. It was clear in the fall of 1963, when our discussions began, that this was a critical issue to which our society was going to have to address itself. While it was apparent that the problem was highly complex and involved much more than birth control or the acceptability of a particular method, it was also true that many Catholics were hampered in discussing the issue, if not actually silenced, because of difficulty they faced in reconciling the position of their Church on contraception with the views of many of those involved in the discussion. Yet Catholics must involve themselves, since the decisions made and the actions taken will have serious implications for them and their society. The association was in a position to bring this to their attention, along with material geared to informing them of the problem and acceptable approaches to it, on the basis of which they might become capable of preparing themselves for effective participation in discussions and decisions on the various issues involved.

Georgetown University was engaged in celebrating its 175th Anniversary under the theme, "Wisdom and Discovery for a Dynamic World." Here was an area where wisdom and discovery were patently needed. Georgetown had already established a Population Research Center; it is, in fact, the first Catholic university in this country to have done so. The association asked for and received the University's cosponsorship for this endeavor.

Thanks are due to the Program Committee of the Catholic Association for International Peace, which, under my chairmanship, consisted of Benedict Duffy, M.D., Victor Ferkiss, Right Reverend Monsignor Joseph Gremillion, John T. Miller, Jr., and Reverend James L. Vizzard, S.J., and to the Reverend George Dunne, S.J., of Georgetown University, for developing the program for the conference. Particular thanks are due to the participants for the way in which they responded to our efforts and the character of their presentations.

In a brief space of time, just a very few years, important segments of our society here at home and of those involved in the development process abroad have come to realize that rapid rates of population growth present serious problems. Many insist that after the problem of nuclear warfare, the problem of population is the most important one facing mankind in our age.

There is a tendency on the part of many to see rapid rates of population growth as giving rise to a barrier on the road to progress and threatening peace and stability in the world because population growth may make it impossible to meet in a timely fashion the reasonable aspirations of hundreds of millions of peoples in the underdeveloped countries. There is a tendency to move from this conclusion, in an age where science and technology have largely replaced recourse to magic and miracles, to the belief that all that is needed is the development and distribution of cheap and effective contraceptive devices. From this it is but a short step to the belief that all that stands in the way of an effective program of this nature is the Catholic Church with its continued refusal to accept the use of artificial devices to inhibit contraception.

Still others, with a similar faith in science and technology, insist that the Malthusians and neo-Malthusians are wrong, and that there is no population problem. They believe that there are adequate resources in the world and a

*Ed. note: This exhibit consists of an introduction and the chapter "Attitudes of Our Society to the Population Question," both written by William E. Moran, Jr.

sufficiently developed technology for it to be possible to feed an ever-increasing number throughout the world for decades to come. The problem is not so simple. While, in theory, the resources may exist and the technology may be available, the fact is that already with the growth of population in this century one to one and one-half billion people are hungry. And this is speaking at the animal level. This takes no account of the lost dignity for the man who cannot for lack of education and means realize his potential or see the hope that his children may realize theirs. Even now we face a grave problem arising from population growth which has already taken place. As one of our contributors points out, something like one-third of the population which will inhabit the earth by 1980 is already born. The same contributor also points out that, even if the most sanguine hopes of those who propose birth control as a solution were realized, the populations of Latin America and South Asia would still double before the end of the century.

We are faced with the problem of rapid population growth because of the wonders science and technology have made possible. We have been able cheaply and effectively to reduce the death rate throughout the world. We are now faced with quite a different kind of problem. If significant reductions are to be made in birth rates, or if there are to be significant increases in production and distribution of food and other goods in the world, much will have to be done by hundreds of millions of people throughout the earth. No external agency can do it for them, as it could in controlling death rates. Yet these people, in the main unlettered and living in traditional societies, are antipathetic if not antithetic to the acceptance of new ways or the applications of new methods made possible by science and technology. Great social change, which we barely begin to know how to bring about, or to cope with, will be required if we are to begin to solve this population problem in this century.

In general terms, it may well be true that there are adequate resources in the world and a sufficient knowledge of technology that it would be possible, not alone to feed the world's population, but to meet the minimum needs for human life and dignity throughout the planet. If true, it is so only in global terms. The resources themselves and the people with the knowledge and willingness to apply the skills are not evenly distributed nor will they be at any early date. Despite the willingness of wealthy countries with surplus food supplies to cooperate in a Food for Peace program, there have been distinct limits as to the ability to use surplus foods in many areas because adequate distribution systems were not available. There is a reasonable question as to how long the wealthy countries will be prepared to use their resources and skills to compensate for inadequacies in the poorer countries.

The problems presented by rapid population growth are many and complex, and we shall be grappling with them for decades to come. If we do not deal with them effectively and in a timely fashion, they may well threaten the tranquillity, even the peace of the world. More than this, for those who profess Christianity, this is a moral problem of awesome dimensions.

It has been our effort in this discussion to make a first step in identifying some of the main issues involved and suggesting questions requiring urgent attention. It is our hope that this first step may lead many to think, study, and act.

ATTITUDES OF OUR SOCIETY TO THE POPULATION QUESTION

This paper attempts a brief protrait of the attitudes of our society toward the question of the world's rapid population growth and the way in which such growth may be a threat to stability and peace. Such a presentation should help interested and responsible Catholics to understand how their fellows in this country and elsewhere feel about this problem. It is appropriate and timely to take such a survey because there has been a very substantial change over the last few years in the way in which our society has come to see this problem. When I speak of our society, I mean primarily, but not exclusively, our fellow Americans. We are, of course, a part of a broader international society, and what our fellows abroad think has an impact on our own thinking and must be taken into account.

In this portrayal I shall consider the changes in our public policy, public discussions of the subject, its treatment in the mass media, and the action programs of our government and of international agencies. This should at least illustrate what areas of our society are concerned with rapid population growth, how they see such growth presenting a problem, and what they think should be done about it.

Changes in public policy

Let me cite two of what may well be the more significant indications of how, in the public sector, attitudes have rapidly changed over the last four or five years. In 1959 General William H. Draper issued a report of a President's Committee to study the United States Military Assistance Programs. This report suggested that foreign aid would have to be accompanied by birth control if the good effects of the aid were not to be nullified by excessive population growth. It proposed that the United States furnish birth-control information on request to other countries. In December 1959, however, President Eisenhower said, "I cannot imagine anything more emphatically a subject that is not a proper political governmental action or function or responsibility . . . we do not intend to interfere with the internal affairs of any other government and if they want to do something . . . about what is admittedly a very difficult question, an almost explosive question, that is their business. And if they want to go to someone for help, they should go, they will go unquestionably to professional groups not to governments. This government will not . . . as long as I am here, have a positive political document in its program that has to do with this problem of birth control. That's not our business."

In December 1962 Dr. Richard N. Gardner, Deputy Assistant Secretary of the Department of State for International Organization Affairs, speaking for the United States in the United Nations, said it would "help other countries, upon request, to find potential sources of information and assistance on ways and means of dealing with population problems."

In 1963 President Kennedy, in response to a press conference question, declared that we need to "know more about the whole reproductive cycle" and that this knowledge should then "be made more available to the world." Following this up, the National Academy of Sciences in a brochure entitled *The Growth of World Population*, dated April 17, 1963, recommended that substantial increases should be made in research for better understanding of the physiology and biochemistry of the reproductive process and, for pilot projects, for developing new, basic knowledge in new techniques, procedures, devices, and medically active compounds for the regulation of fertility.

In the fall of 1963 former President Eisenhower stated: "When I was president, I opposed the use of federal funds to provide birth-control information to countries we were aiding because I felt this would violate the deepest religious convictions of large groups of taxpayers. As I now look back, it may be that I was carrying that conviction too far. I still believe that as a national policy we should not make birth-control programs a condition to our foreign aid, but we should tell receiving nations how population growth threatens them and what can be done about it. Also, it seems quite possible that scientific research, if mobilized for the purpose, could develop new biological knowledge which would enable nations to hold their human fertility to nonexplosive levels without violating any moral or religious precepts."

The Agency for International Development now provides information and consultants for family planning programs. This is an extension of its long-term practice of providing assistance in the field of census taking and demography. The Agency does not as yet provide financial assistance for the procurement of materials or the building of facilities to produce them.

In November 1959 the Catholic bishops of the United States, meeting in Washington, had reacted quite adversely to the Draper Report. In 1960 Norman St. John-Stevas prepared a report to the Center for the Study of Democratic Institutions on Birth Control and Public Policy as a part of a comprehensive study of morals and law in connection with the Center's study of religions institutions. This has now been reprinted under the title *Birth Control and Public Policy* by the Family Life Bureau of the National Catholic Welfare Conference. The following statement from his introduction is worthy of thoughtful consideration: "It is most unlikely that Americans will ever reach ultimate agreement on the morality of birth control. Conceivably, though, some working agreement about public policy can be achieved. That agreement will not be reached in an atmosphere clogged with exaggerated charges, emotional recriminations, and sloganeering. It will require a cool knowledge of the factual situation, of the arguments made for and against the disputed practice, and of the proper relationship between morals and the law." His study is completed with twenty-three concisely stated conclusions, of which the following three are especially pertinent here:

(20) World population growth presents a challenge to the Christian conscience to secure an intense and concerted international effort to raise

living standards. Given such an effort, the prospects for a very considerable increase in world food production are favorable.

(22) Receipt of help under the United States foreign-aid program should not be made conditional on the adoption of artificial birth-control policies by the recipient state, nor should foreign-aid funds be used to implement such programs, even at the request of the designated state.

(23) The United Nations' policy of neutrality on the question of contraception is the only one possible in view of the conflicting opinions of member states. Rhythm is the only method of birth control that would be acceptable as a means of international family planning.

The first of these conclusions recognizes the challenge presented by rapid population growth in the world and is cited for that reason. The last two are cited to show how things have changed since 1960. In this scholarly study these two positions were altogether reasonable when written. What has happened to the first of them can be seen in the change in American policy noted above. The second reflected the fact that a great many Catholic countries represented in the United Nations refused to agree that the United Nations had any right to deal with the question of population limitation.

On December 18, 1962, however, the United Nations General Assembly concluded the first debate in its history, devoted entirely to the subject of population. It adopted by sixty-nine affirmative votes (including that of the United States), twenty-seven abstentions, and not a single negative vote, a major resolution calling for an intensified population program through international cooperation. The Latin-American countries had come to a decisive change in their attitudes. The Catholic negative bloc had been broken. There was still no agreement that the United Nations should have an action program aimed at population limitation—but this question will be considered in the next General Assembly.

From the 10th to the 20th of December 1963 there was held in New Delhi the first Asian population conference jointly sponsored by the United Nations Economic Commission for Asia and the Far East, the Bureau of Social Affairs, and the Bureau of Technical Assistance Operations in cooperation with the government of India. (It should be noted in passing that a number of Catholics from Japan, the Philippines, and India participated effectively in this conference.) Now the United Nations is making preparations for a world population conference to be held in 1965 in Belgrade. Thus in the few short years since 1960 we moved from the position where a most perceptive observer felt "the United Nations' policy of neutrality . . . is the only one possible," to one where the United Nations is an active proponent of studies of action programs in the field of population, and may soon reach agreement on participation in such programs.

This leads inevitably to Latin-American attitudes. In Latin America both culture and religion long led to a belief that any proposal for restrictions on fertility would be repudiated. But the Latin Americans also are realizing that they face a problem. In the field of morality they are shocked to learn from recent studies that large numbers of women are resorting to illegal abortions to avoid more children. It is worth noting that at the first of what is proposed to be at least ten annual meetings of the Catholic Inter-American Cooperation Programme, which was held in Chicago in February 1964, the statement was made that population growth is an important factor in the whole problem of Latin America, and there was no dissent. Moreover, the Latin-American nations who had been a part of a solid bloc opposed to United Nations action have, over the last four years, either voted for action by the United Nations on population or abstained in increasing numbers. At a meeting at the Pan-American Union in September of 1964, where the whole question of population was discussed before a large number of the ambassadors to the Organization of American States, no one questioned that this was an important problem demanding attention. This new Latin-American attitude and interest are reflected in the October 5, 1964, *Weekly Newsletter* of the Alliance for Progress, which opens with the following: "The Alliance's emphasis on long-range economic and social planning is focusing attention as never before on the problem of Latin America's expanding population." It then devotes half of its four-page issue to the problem presented by expanded population, not in terms of food supply alone but in terms of the effects of such growth on all efforts to promote social and economic progress in Latin America.

Public discussion

The Population Dilemma, a publication of the American Assembly of Columbia University under the chairmanship of Henry M. Wriston, was published in 1963. This book was the basis for the first American Assembly on population—the twenty-third American Assembly—held at Arden House at Harriman, New York, from May 2–5, 1963. This meeting has already been followed by seven regional assemblies held in San Francisco under the sponsorship of the World Affairs Council of Northern California from June 27–29, 1963; in the Washington area under the sponsorship of the George Washington University from November 14–17, 1963; at Palm Springs, California, from November 28 to December 1, 1963, under the sponsorship of Occidental College; in New Orleans under the sponsorship of Tulane University, from January 30 to February 2, 1964; in the northwest at the University of Oregon, from February 6–9, 1964; in the Midwest at the University of Missouri from February 13–16, 1964; in New England, under the sponsorship of the World Affairs Council of Boston, from April 16–18, 1964; and finally, by the Associated Colleges of the Midwest under the sponsorship of the Johnson Foundation, Racine, Wisconsin at Wingspread, April 16–19, 1964. The attitudes expressed by the participants in the National Assembly and in the regional assemblies varied greatly, but, with the exception of a minority report in the last cited, there was general agreement that rapid population growth in the world posed the United States a very serious problem demanding attention. Happily, most of these groups recognized the delicacy of the problem and the need, in facing it, to pay attention to the rights of individuals.

In the annual conference of the Committee for International Economic Growth in 1963, there was, for the first time in its activities, a special panel devoted to this question of population and economic growth. Here we have a group devoted to the question of improving the lot of man in the underdeveloped countries, speaking for the first time on the question of population. The Society for International Development in the same year had, again for the first time, a panel devoted to the question of population. In their conferences, therefore, two of the major national organizations dealing with the question of international economic growth and foreign aid have admitted the relevance of including a discussion of the question of population.

Mass-media treatment

The growth of interest in the question of population in our society has been reflected in the mass media. More and more newspapers include articles concerning the population question. One can hardly visit the magazine stand on any given week without finding at least one magazine, often a mass-circulation periodical, with an article on the same problem. There is a tendency for many of the popular magazines to treat this in a rather limited and cavalier fashion, as a conflict between the Catholic position and others. This treatment may take the form of a pathetic plea by a Catholic mother, as in the *Saturday Evening Post* for April 4, 1964, or a suggestion by implication, as in an article entitled "The Church and the Pill" in *The Nation* for October 5, 1964, that the population question is now one which must be solved by the Catholic Church through a change in its position on the use of contraceptives. *Cosmopolitan*, in its issue of September 1964, carries a long article on "Catholics and Birth Control"—a rather balanced presentation, but one that nevertheless suggests that the only thing standing in the way of an effective approach to the population question is the position taken by the Catholic Church.

Other periodicals, such as *McLean's*, a Canadian magazine, present more concise information on the importance of the population problem, as in an article entitled "The Birth Control Explosion" in the issue of March 21, 1964. In this article the question is raised as to whether foreign aid can hope to raise living standards in underdeveloped countries unless birth control is practiced, so that increases in growth are not eaten up by an even larger expansion of population. *Science*, in its May 1, 1964 issue, speaks hopefully of the success of the activities of the International Planned Parenthood Federation in Latin America following its meeting in Puerto Rico and the indication that the American aid agency, the Agency for International Development, was prepared to move in on birth control in that area.

Going back a little further, the *Saturday Review* of February 16, 1963, has an article by Grenville Clark entitled "Solving the Inhuman Equation." This is a thoughtful treatment of the relation of the problem of nuclear war and the population explosion. "The two paramount problems of our time, which in some way

affect all the people of the world," says the author, "are the problem of preventing nuclear war and the problem of population control." Marya Mannes, in an article in the August 15, 1964, issue of *Vogue* in turn insists that after the bomb, rapid growth of population is the most important problem facing our society.

Getting a little further from the mass media, but still of popular significance, the 1964 *World Year Book* publishes an article entitled "Population Boom . . . or Boomerang," subtitled "The World Faces a Man-Made Crisis—'Population Explosion.'" This asks whether or not man can "use the same science and technology that created the problem to solve it? Or will hunger and poverty sweep across the face of the world?" *Life*, *Look*, and *The Reader's Digest* all have had articles in recent months on the subject.

Catholic magazines have also become interested and involved in this question. The *Commonweal* devoted the entire issue of June 5, 1964, to the question of "Responsible Parenthood." This discussion covers a wide range of opinion, reflects the complexity of the problem for the individual and the world, and suggests questions to be considered, without presuming to offer any simple, easy answers. The same magazine, in its October 9, 1964, issue, considers editorially another aspect of the population problem under the heading "Race Against Hunger," concluding that some form of family limitation is essential and must be actively encouraged. "The theologians" the editorial continues, "can and should argue about what means of achieving this are moral, but it would be foolish for any of us to close our eyes to the gravity of the problem we face." In the December 1963 issue of *Jubilee* two articles—one by a Catholic mother, one by a Catholic father—asked for a clarification and restatement of the Church's teaching on marriage, sex, and birth control in the light of current developments, not only in theology, but also in science, medicine, and psychology. *Jubilee* invited its readers to comment on the article, and in its June 1964 issue devoted some seventeen pages to comments received from its readers.

That Latin-American countries have begun to think seriously about this problem is also reflected in the mass media. The magazine *Vision* has instituted in *Progress* what it hopes to be the yearbook on Latin America. The lead article in the new yearbook, by Alberto Lleras Camargo, former president of Colombia, starts out with a statement that "there is a crisis today, brought on by the population explosion that is going on mainly in the racially mixed, tropical, extremely poor belt that circles the globe and separates the two white zones of the earth—the industrial, the rich region of the North and that of the far South." He goes on to say that "the peoples of the hemisphere will not be able to accomplish the great things they set out to do under the Alliance unless there is a full and frank airing of one of the main causes of social sickness and economic waste—the huge increase in the number of people. This problem had been noted hundreds of times in passing or as a side issue; it has not been analyzed fully or in its own right. This is the cause of much of the unrest, frustration, and the near despair which are wreaking more havoc among the leadership elements than among the masses, who are not equipped to understand the real source of their plight and simply attribute it to the government in power."

There have, of course, been dissents to proposals to restrict population growth, but even these recognize there is a problem. In *Report* for June 1964, which devotes itself to the topic "Population—The Real Issues," the lead article is entitled "When Demography Becomes Demagoguery." Barbara Ward is quoted on the responsibility of the rich countries doing something to help the poor countries and, finally, it is suggested that the idea of restricting population growth is "a negative solution arising from a shortsighted, stopgap mentality." The article goes on to say that "in a final analysis, the birth-control proposal covers up a defeatist attitude, which fails to take into account the resources and potentialities latent in the whole of nature including man himself." It suggests that growth of population is a great challenge to our people, to all of the peoples of the world, to make the social and personal changes required so that our technology can be applied to our resources in such a way that all men may be adequately taken care of, rather than in an attempt to restrict increases in population.

The London *Economist* for September 5, 1964, in an article entitled "People, Not Population," takes a quiet, concise, hard look at the problem posed by rapidly rising population. It recognizes the dangers posed by rapid population growth, both in the underdeveloped and the developed countries, and concludes: "Man

will need to control his nature and his habits of procreation if they are not to control him but, life being as infinitely complicated as it is, one can only feel one's way piecemeal toward the kinds of control that will do more good than harm. At least we should start genuinely examining the problems now instead of putting our heads in the sands of an inherited and now uneasy optimism. In the early nineteenth century the slums themselves were regarded as an aspect of progress."

This is by no means an exhaustive review. It is meant only to illustrate the attention recently given by mass media and certain other influential journals to the population question. Since magazines and newspapers do not ordinarily use space on subjects unless sizable segments of the population are interested in them, this recent expanded treatment of the population question would seem to indicate an increase of interest in it by our society.

Action programs

Fertility Control. There has been a considerable expansion in activities related to the control of fertility over recent years. The International Planned Parenthood Association has steadily expanded its activities abroad, most recently in Latin America, with increasing attention and success. The Ford Foundation also expanded its activities, setting up in 1963 a separate organizational unit responsible for population programs. In its annual report for 1963 the Rockefeller Foundation, reassessing its activities over the years, established new orders of priorities for its activities. Concerning the population problem, it came to the conclusion that "an increasing number of thoughtful persons agree that no greater challenge faces mankind than the stabilization of population. The rate at which new individuals are coming into the world each day is stark evidence that sheer numbers may so overburden resources that social progress will grind to a halt." The report announced that its board of trustees had, in a policy document entitled "Plans for the Future," decided to include the population problem under the five areas of concentration to which it would devote priority attention. It should be noted that another of the five areas was "Toward the Conquest of Hunger." As to the action proposed, the Foundation announced that the factors involved are many and complex and must be approached from various points of view and that it would, therefore, assist (1) research relating to human fertility; (2) research in demography and on cultural attitudes; and (3) pilot operations and studies in areas where population density poses an especially difficult problem and where there is a desire for help.

The report of the Population Council for 1962–1963 states that "during the two years under review, 1962–1963, a turning point was passed in general public awareness of the problems of population growth. These years, which close the first decade of the Council's work, brought widespread public understanding that rising rates of population growth are serious threats to human welfare in much of the world. The views of scientists became the views of the people, at least enough people to influence national decisions in enough nations to make an impact on the world." The Council carries out research programs in demography and training programs for advanced graduate studies in population for personnel from Asia, Africa, and Latin America. In the two years under review the Council strengthened its support of these programs. It makes research grants for demographic research, and provides technical assistance and research in family planning. It was active in the period under review in Pakistan, Korea, Taiwan, Tunisia, Turkey, and the United States with studies of potential or actual family planning programs. It supports studies in fertility control, aimed at gaining greater knowledge of human physiology and fertility and the development of devices or methods to control fertility. Its annual budget has grown from $147,000 in 1953 to $5,591,000 of expenditures in 1963. Funds were provided by The Ford Foundation, but also by numerous other contributors. Approximately one-half of the funds for 1963 were contributed by The Ford Foundation. The remainder was furnished by a number of other foundations and private individuals.

Thus, over recent years, action programs and research programs have been stepped up in response to growing public recognition and growing acceptance in a number of countries of the idea that birth rates must be controlled. In December 1962 the General Assembly of the United Nations voted down a resolution that that organization should give technical assistance for national projects and programs dealing with the problem of population. In the same month, however, an official representative of the United States, speaking before the

United Nations Economic Committee, expressed the concern of the United States with America's population trends, as well as those of the less developed countries, and while stating that "the population policy of any country inust be determined by that country and that country alone," went on to say that "the United States believes that obstacles should not be placed in the way of other governments which, in the light of their own economic needs and culture and religious values, seek solution to their population problem." He added that "the United States hoped that the valuable efforts of the United Nations in the population field might be substantially expanded."

This was followed by an announcement by the Agency for International Development that requests from developing countries concerning the social and biological aspects of the population problem would be referred to the United States Public Health Service and the Children's Bureau. It was also announced that the United States was making a contribution of $500,000 to the World Health Organization for research on human reproduction, and the Agency for International Development appointed a demographic consultant. While national governmental organizations, with the exception of a few like Sweden, have not yet very actively entered the field, it seems certain that the United States will soon go on to more extensive assistance to countries seeking to control fertility. It is altogether probable that the United Nations will also, very soon, have an active program of this same nature, quite apart from the important demographic work it has long carried on.

A number of states have established programs to control population growth. That of Puerto Rico has long been widely reported. In December 1963 the first Asian Population Conference was held in New Delhi under the joint sponsorship of the United Nations Economic Committee for Asia and the Far East and the United Nations Bureau of Technical Assistance Operations, with the cooperation of the government of India. The keynote speeches indicated that the purpose of the conference was to explore means of checking population growth in order to make economic development of greater benefit to the people of the area; this approach was not acceptable to a number of the participating countries, however. As the conference continued, the complexity of the problem of population growth was recognized, and it was seen that the problem differed for each country. This conference, where efforts at population control by a number of countries was discussed, was apparently a sobering experience; it led to conclusions that family planning alone is not the answer but, at the least, must be accompanied by great social changes leading to a better use of resources. A useful brief report is contained in the February-March issues of *Social Action*, a publication of the Indian Social Institute. This contains summaries for each participating country, most of which indicate whether, and sometimes to what extent, the governments have programs to limit population growth.

Freedom from Hunger Campaign. One of the questions most often raised when rapid population growth is discussed is whether or not food production is keeping pace with and can be expected to keep pace with such growth. The problem of improving world nutritional standards has been a preoccupation of international agencies since the days of the League of Nations. The United Nations, many of its specialized agencies, and a number of national foreign-aid programs have been providing assistance to developing countries in the agricultural field for many years.

In 1960 a five-year Freedom from Hunger Campaign was initiated by the Food and Agriculture Organization (FAO) with the cooperation of other specialized agencies of the United Nations. The FAO has made three studies of hunger in the world since the last war. These World Food surveys were made in 1946, 1952, and 1963. The last study reveals that from one-third to one-half of the world's population, that is, between one billion and one and a half billion people, still suffer from hunger and malnutrition. It also suggests that world food supplies would have to be more than doubled by 1980 and tripled by the turn of the century in order to bring about a moderate improvement in the level of nutrition of the peoples of the world. The report recognizes that the problem is different in different regions, that greater problems exist in some than in others, and that greater efforts may be required in some than in others. In its section on "The Possibilities of Producing the Required Food," the following conclusion is reached:

> Production possibilities were kept in mind when setting up the short-term targets, but one is left wondering whether the large increases can in fact be achieved over a decade or so. These doubts may be even stronger in the case

of the more distant objective. But there should be little room for doubt on one score: the world could grow enough food to meet all these needs if we made rational use of nature's bounty. Doubts arise because the necessary effort to reach the targets may not be made. Other objectives may cloud the horizon: the financial resources required to develop the world's agriculture may not be made available; the incentive to expand production may be absent in many parts of the developing world, and the underdeveloped countries may be unable to purchase the food supplies they require.

Major activities in technical and financial assistance over many years and the distribution of surplus food supplies from developed countries have not yet made it possible to assure adequate food to our increasing world population. Despite belief in our technical capacity to meet these needs, serious doubt remains that they will in fact be used.

MRS. THEODORE WALLACE

Senator GRUENING. We would like to call, as our next witness, Mrs. Theodore Wallace.

Mrs. Wallace, the subcommittee is very pleased that you have come this morning from Shawnee Mission, Kans., to take part in this growing population dialog. You are the ninth woman to participate. To date, the subcommittee has heard from more than 60 persons so you can see that the ratio of men to women is rather lopsided.

Mrs. Wallace is the vice president of the National Council of Churches of Christ in the United States of America and a member of the World Council of Churches' Department of Cooperation of Men and Women in Church Family and Society.

Her experience at the national level includes 3 years as national president of United Church Women, a position she held from October 1961 until October 1964. A former president of United Church Women of Kansas City, she was for 2 years State assembly chairman for United Church Women of Missouri.

Mrs. Wallace is a member of St. Peter's United Church of Christ in Kansas City, Mo., and a former first vice president of the Kansas City Council of Churches.

She has been active in community affairs as president of the board of directors of the Kansas City YWCA and president of the parent-teachers' association.

Mrs. Wallace graduated from Teachers College of Kansas City University with a B.S. degree in education. She has taught speech and dramatics in elementary schools. Her husband is a Kansas City businessman and her two daughters now are in college.

Mrs. Wallace, we are very happy to have you here. Please proceed.

STATEMENT OF MRS. THEODORE F. WALLACE, VICE PRESIDENT, NATIONAL COUNCIL OF THE CHURCHES OF CHRIST IN THE UNITED STATES OF AMERICA; ACCOMPANIED BY WILLIAM GENNE, DIRECTOR, MARRIAGE AND FAMILY LIFE OF THE STAFF OF THE NATIONAL COUNCIL OF CHURCHES

Mrs. WALLACE. Thank you very much, Senator Gruening. We do appreciate this opportunity to appear before you.

I would like to introduce William Genne, who is with me, the director of marriage and family life of the staff of the National Council of Churches.

My name is Mrs. Theodore Wallace. I live in Shawnee Mission, Kans. My husband and I have two daughters. I am a homemaker. I am before you this morning in the role as a vice president of the National Council of Churches of Christ in the United States of America, to lay before you the statement of the general board of the council regarding responsible parenthood. We believe the moral position stated therein has application to Senate bill 1676 now before this committee.

ORGANIZATION AND FUNCTIONS OF NATIONAL COUNCIL OF CHURCHES

First, may I briefly tell you about the National Council of Churches—what it is, its organization, and how it functions—so that you can understand how this statement originated. The council is the agency created by 30 Protestant and Orthodox churches in the United States for cooperative study and action about the concerns they share as they respond to the teachings and love of Christ in the world today.

The member churches use the council to pioneer, experiment, and render service in about 70 program areas. Our work in each area, or subject, is directed by a committee which represents the member churches. Mr. MacCracken, whom you will hear later this morning, is from the division of overseas ministries, which is one of four major program divisions, and he will define the division he represents. The three other major divisions are: the division of Christian education, relating to colleges, seminaries, and the other educational ministries of the churches; the division of Christian life and mission, relating to the work of the churches in our contemporary society, including efforts toward social welfare and ministries to persons in special need, such as Indian Americans, migrant farmworkers, and persons in affluence or poverty; the division of Christian unity which seeks to promote increased understanding and cooperation among all Christian churches.

When the churches become aware of some ethical issue, they strive to reach some common understanding about the response, or responses, required by the love of Christ.

With the help of specialists on representative study committees, the churches define the issue, in terms of religious faith, and then recommend the actions that seem appropriate. This judgment is rendered only after a formal review and action has been reached by all of the representatives of the churches to the general board of the council.

THE COUNCIL OF CHURCHES IS "VITALLY CONCERNED" WITH S. 1676

Thus you see that the statement to which I refer this morning represents the considered judgment of a representative group of American citizens who, because of their religious faith, are vitally concerned with the legislation the committee is considering.

This particular policy on responsible parenthood was recommended to the general board by the committees of nine different units in the council and was adopted by the general board with no negative votes. Our Orthodox members did abstain from voting on this question, because of their differeing religious convictions.

The complete statement is attached to copies of my remarks given to your committee. I will not read here the sections of the statement that

deal with the responsibility of the husband and wife to reach a moral decision in this matter.

Senator GRUENING. The complete statement will appear at the conclusion of your testimony, Mrs. Wallace.

Mrs. WALLACE. Since this question before the committee is a matter of public legislation, I would prefer to direct the attention of the committee to the final two paragraphs which address themselves to "The Task of Society." They read as follows:

SOCIETY HAS THE OBLIGATION TO ASSIST PARENTS

While responsible parenthood is the moral obligation of husband and wife, the concept has implications for society also, to assist parents in the exercise of their duty. In addition to the educational and social services called for to help equip children for their fullest development and contribution to society, there are services due married couples. For most couples, family planning requires access to appropriate medical information and counsel. Legal prohibitions against impartation of such information and counsel violate the civil and religious liberties of all citizens including Protestants. Their right to means they approve in conscience does not infringe the rights of others to refrain from using such means. Legislation or institutional practices that impair the exercise of moral and professional responsibilities of family-serving professions should be opposed.

"CHRISTIAN RESPONSIBIITY INDICATES THAT . . . AID FOR FAMILY PLANNING SHOULD BE GIVEN"

As Christians and citizens in a world society, we also have the responsibility to help our fellowmen overseas. Public health programs in economically less developed countries, often with substantial assistance from our Government, have helped to create new population pressures. Therefore, at the request of people in other countries, we believe our Government and voluntary agencies have a duty to assist with various measures to alleviate population pressures and to extend family planning. Private agencies have an important role to play, but the scope of the population problem internationally vastly exceeds their resources. Christian responsibility indicates that, when requested by other governments, governmental and intergovernmental aid for family planning should be given favorable consideration as part of a wise and dedicated effort to advance in the underprivileged regions of the earth the essential material conditions conducive to human dignity, freedom, justice, and peace.

". . . IT IS A VALID AND PROPER ROLE OF GOVERNMENT TO PROVIDE THE INFORMATION AND SERVICES"

We would stress that it is a valid and proper role of Government to provide the information and services necessary for each person to be able to exercise a free moral decision in this matter. In fact, we would say it is the responsibility for the Government to do so in an instance such as this where the physical, emotional, mental, and we would add, spiritual, health of families is involved.

We would further stress that this must be the offering of a service without coercion, and with full respect for the dignity and moral religious convictions of the individual.

". . . FREEDOM OF ACCESS IS AN ESSENTIAL FACTOR IN FREEDOM OF CHOICE"

We are convinced that many of our fellowmen here in America and elsewhere in the world are at the present time denied the opportunity of making a moral choice in this matter, because they do not have access to the necessary information and services. This freedom of access is an essential factor in freedom of choice. As we quoted earlier,

"Their right to means they approve in conscience does not infringe on the right of others to refrain from using such means."

In the terms of these principles and in view of the dire need which this bill seeks to meet, we believe Senate bill 1676 is worthy of your support and approval.

Mr. MacCracken is prepared to speak on some of the worldwide aspects of this question as we of the National Council of Churches General Board see them.

Thank you, Mr. Chairman.

Senator GRUENING. Well, thank you very much Mrs. Wallace, for a very helpful statement.

You say that in this vote that there were certain members who were Orthodox who did not express an opinion. Is there a diversion in your congregation along those lines?

Mrs. WALLACE. I do not know that I would call it a division. There is a difference of opinion in this particular interpretation of our religious faith. I think it is noteworthy that the Orthodox vote was one of abstention rather than a negative vote.

But our statement of responsible parenthood, which your committee was given, explains further that the Orthodox Church follows the traditional teaching which sanctions marital abstinence as a means of family planning. There is a difference in points of view, but I would not say it is a difference in other aspects.

Senator GRUENING. What I was trying to ascertain was whether some people of your denomination would feel that contraceptive methods are not morally correct or wise. Do you think that is so?

Mrs. WALLACE. You mean other than the Orthodox membership of the national council? I would like to refer the specific response to that question, if you will allow me, to our staff, who is the resource director in this.

Senator GRUENING. Yes; I would like to bring that out.

You heard the discussion that went on with Dean Moran.

Mrs. WALLACE. Excuse me, Senator. Excuse me. Dr. Genne is here. Would you like his answer at this time?

Senator GRUENING. I would be very happy to have you answer.

Dr. GENNE. As Mrs. Wallace——

Senator GRUENING. Please give your name to the stenotypist.

Dr. GENNE. Yes. William Genne, G-e-n-n-e. It was French once upon a time.

EASTERN ORTHODOX TRADITION CHURCHES CONCERNED

As Mrs. Wallace has indicated, the National Council of Churches is made up of 30 different member churches and communions. Several of these are from the Eastern Orthodox tradition, and they do hold, as Mrs. Wallace has indicated, to the view that the only proper method of conception control is abstinence, but they recognize that this is a grave moral problem in the world today. They were aware that there was an overwhelming Protestant consensus on this matter, and so when this statement came before the national council's general board they agreed to abstain rather than to oppose.

Senator GRUENING. I think that is a very good answer.

"CONTRACEPTION MERELY PREVENTS LIFE, WHEREAS BY ABORTION LIFE IS DESTROYED"

You heard Dean Moran speaking about abortion; we had a little colloquy on the subject. I wonder what your views would be on the morality of trying to impress upon society the tragic and dangerous consequences of abortion, a practice which must be recognized as existing since we have testimony, reliable testimony that at least a million abortions take place in the United States every year. We know they take place abroad. We know that many women who undergo these operations become infected, and it is very clear that those who resort to abortion are desperate. They take this tragic, risky, dangerous remedy because they feel that the alternative of having an unwanted child for one reason or another is worth that risk. So it seems to me that if we could emphasize to those who have moral scruples against contraception that by it no life is destroyed. Contraception merely prevents birth, whereas by abortion life is destroyed. I hope increasing numbers of people will make this distinction, and that those who have religious scruples against contraception will bear this reality in mind. Maybe if we could stress this distinction, it would cause a change on the part of those who still feel that any form of contraception is immoral.

What do you think of that?

NATIONAL COUNCIL IN RESPONSIBLE PARENTHOOD APPROVES CONTRACEPTION, CONDEMNS ABORTION

Mrs. WALLACE. The general consensus within this statement from the National Council in Responsible Parenthood, the general consensus is that contraceptive methods are morally acknowledged and permissible.

I would like to hold, though, to this statement, however, Senator Gruening, in expressing the view of the general board about abortion which says:

> Protestant Christians are agreed in condemning abortion or any method which destroys human life except when the health or life of the mother is at stake. The destruction of life already begun cannot be condoned as a method of family limitation.

And then we do agree that the ethical complexities that are involved in the practice of abortion related to the abnormal circumstances need additional study by our Christian scholars. But this is the point of view that we hold in relation to abortion.

ABORTION—"A VERY DANGEROUS, TRAGIC, COSTLY COURSE"

Senator GRUENING. I am glad that this subject has come up in these hearings, really today almost for the first time, because I think this is an important aspect which might cause some of those who still have religious objections to contraceptive techniques that are not approved, to change their attitude. Certainly no pregnant woman who seeks an abortion should fail to realize that this is a very dangerous, tragic, costly course aside from its moral aspects.

Mrs. WALLACE. That is true.

Senator GRUENING. And it may result either in death or in permanent disability.

Mrs. WALLACE. Your point is right.

Senator GRUENING. Thank you very much.

Mrs. WALLACE. Thank you for the privilege.

(Pamphlet referred to earlier and entitled "Responsible Parenthood" follows:)

EXHIBIT 33

RESPONSIBLE PARENTHOOD

(Statement adopted by the General Board of the National Council of the Churches of Christ in the U.S.A., February 23, 1961)

PREAMBLE

The National Council of the Churches of Christ in the U.S.A. exists in part "to do for the churches such cooperative work as they authorize the Council to carry on in their behalf," while at the same time recognizing that any member church may disassociate itself from an action of the Council.

In the present instance many member churches have already given formal expression to the same basic conviction as is contained in this statement. But differences of conviction exist which make it necessary for representatives of the Orthodox churches to abstain from voting on this pronouncement.[1] The Council provides a meeting place for continuing study, in Christian freedom, of the implications of the Christian faith for responsible marriage and parenthood.

With these facts in mind, the General Board of the National Council of the Churches of Christ in the U.S.A. adopts and issues the following pronouncement on Responsible Parenthood.

THE CONTEMPORARY NEED

In recent decades, advances in medical science have affected marriage and family life in at least two important ways. Because of dramatic reductions in death rates, children generally have a far brighter chance to live to maturity: indeed, the persistence of large family patterns in many societies causes new and dangerous pressures upon presently inadequate means of subsistence. On the other hand, new medical knowledge of human reproduction increases the means available or potentially available to parents for regulating their fertility. In the altered circumstances of today, how is the Christian doctrine of parenthood to be made relevant to the needs of husbands and wives? Without attempting to restate the full range of parental duties, we advance certain considerations bearing on the control of procreation within the marriage bond. The concept of responsible parenthood is considered in relation to the ends of marriage, the reasons for family planning, the methods of family planning, and the task of society.

The Ends of Marriage

Genuine marriage, in the Biblical view, is a union whereby husband and wife become "one flesh" (Gen. 2:24, Mark 10:8, Eph. 5:31). Such a union embodies a covenant, a commitment to a dedicated common life. True marriage, however, is more than a human achievement. It has a "given" quality, expressed in the words of Jesus: "what . . . God has joined together . . ." (Mark 10:9). Hence it is a mystery according to St. Paul which symbolizes the union of Christ and His Church (Eph. 5:32) and is, in turn, illumined by this perfect union.

Since holy matrimony involves an occasion of God's grace, it is clear that the first duty of husband and wife is to nourish and care for the gift which God has given. This task is described in Christian traditions in terms of sanctification and mutual perfection. These emphasize the fundamentally spiritual character

[1] An expression of Orthodox views may be found in *Parents and Priests as Servants of Redemption*, by Athenagoras Kokkinakis, Bishop of Elaia (Morehouse-Gorham Co., 1958).

of the basic purpose of marriage, which can be served through parenthood, companionship, and vocation:

(1) Parenthood is a divinely ordained purpose of marriage for the embodiment and completion of the "one flesh" union, for the care and nurture of children, for building the home as a true community of persons, and for the peopling of the earth (Gen. 1:28). It is participation in God's continuing creation, which calls for awe, gratitude, and a sense of high responsibility.

(2) Mutual love and companionship, rooted in the need of husband and wife for each other (Gen. 2:18), have also been ordained of God for the welfare and perfection of the "one flesh" union and for broader aspects of the sharing of life. Christians differ in regard to sanctions for the sexual expression of marital companionship, though most of our churches hold such expression right and necessary within the marriage bond, independently of procreation. All agree that Christian marriage should be free from sensuality and selfish indulgence, and that mutually accepted periods of continence can be of value in a common life of Christian discipline.

(3) Vocation, or the service of the couple in society, is another high purpose through which "the two become one." It normally includes parenthood and family life as major elements, but can assert a separate or even conflicting claim on conscience. Just as vocation may enjoin celibacy upon those to whom the gift is given (Matt. 19:11), so the calling of the couple may in certain circumstances enjoin family limitation.

Responsible parenthood, in the first instance, means to weigh the claims of procreation in relation to the total purposes of the marriage and the situation of the family in society. For most couples, the new knowledge of human reproduction and of means to avert conception affects ethical decisions regarding parenthood. But the responsibility, to be exercised in prayer and trust, has deeper roots.

Reasons for Family Planning

Within the purposes of marriage ordained by God, there are a number of considerations concerning parenthood which need to be taken into account in trying to determine the number and frequency of pregnancies. These include:

(1) The right of the child to be wanted, loved, cared for, educated, and trained in the "discipline and instruction of the Lord" (Eph. 6:4). The rights of existing children to parental care have a proper claim.

(2) The prospects for health of a future child, if medical and eugenic evidence seem negatively conclusive.

(3) The health and welfare of the mother-wife, and the need for the spacing of children to safeguard them.

(4) The social situation, when rapid population growth places dangerous pressures on the means of livelihood and endangers the social order.

Reasons such as these enter into the calculations of responsible parenthood. At the same time, parents need to remember that having children is a venture in faith, requiring a measure of courage and confidence in God's goodness. Too cautious a reckoning of the costs may be as great an error as failure to lift the God-given power of procreation to the level of ethical decision.

Methods of Family Planning

Christians are agreed that the limitation of procreation may be right and proper for parents under certain conditions, but differences arise in regard to circumstances and methods. The Orthodox Church follows the traditional teaching which sanctions marital abstinence as the means of family planning. Most of the Protestant churches hold contraception and periodic continence to be morally right when the motives are right. They believe that couples are free to use the gifts of science for conscientious family limitation, provided the means are mutually acceptable, noninjurious to health, and appropriate to the degree of effectiveness required in the specific situation. Periodic continence (the rhythm method) is suitable for some couples, but is not inherently superior from a moral point of view. The general Protestant conviction is that motives, rather than methods, form the primary moral issue, provided the methods are limited to the prevention of conception.

Protestant Christians are agreed in condemning abortion or any method which destroys human life except when the health or life of the mother is at stake. The destruction of life already begun cannot be condoned as a method of family limitation. The ethical complexities involved in the practice of abortion related to abnormal circumstances need additional study by Christian scholars.

Another approach to family limitation is voluntary sterilization. Because medical science cannot guarantee that the procedure is reversible it presents the Christian conscience with special problems. Responsible parenthood is seen by many as a day to day process of decision-making which sterilization may negate. On the other hand, where reasons of health or the obligations of parenthood argue for the use of the most effective means of family limitation, sterilization represent one sure method now available. Recognizing the dilemmas confronting Christian doctors and parents, particularly in some of the poorer societies where realistic alternatives seem to be lacking, we are constrained to point out the hazards in sterilization, and to stress the possibility of its use only after the most thoughtful consideration of all the factors involved. Additional study of these factors and of the moral issues entailed needs to be undertaken by Christian scholars.

The Task of Society

While responsible parenthood is the moral obligation of husband and wife, the concept has implications for society also, to assist parents in the exercise of their duty. In addition to the educational and social services called for to help equip children for their fullest development and contribution to society, there are services due married couples. For most couples, family planning requires access to appropriate medical information and counsel. Legal prohibitions against impartation of such information and counsel violate the civil and religious liberties of all citizens including Protestants. Their right to means they approve in conscience does not infringe the right of others to refrain from using such means. Legislation or institutional practices that impair the exercise of moral and professional responsibilities of family-serving professions should be opposed.

As Christians and citizens in a world society, we also have the responsibility to help our fellow men overseas. Public health programs in economically less developed countries, often with substantial assistance from our government, have helped to create new population pressures. Therefore, at the request of people in other countries, we believe our government and voluntary agencies have a duty to assist with various measures to alleviate population pressures and to extend family planning. Private agencies have an important role to play, but the scope of the population problem internationally vastly exceeds their resources. Christian responsibility indicates that, when requested by other governments, governmental and intergovernmental aid for family planning should be given favorable consideration as part of a wise and dedicated effort to advance in the underprivileged regions of the earth the essential material conditions conducive to human dignity, freedom, justice, and peace.

BIOGRAPHIC STATEMENT: JAMES MAC CRACKEN

Senator GRUENING. Our next witness is James MacCracken, executive director, Church World Service Department, Division of Overseas Ministeries, National Council of Churches. He is a director of what is known simply as Church World Service.

The Church World Service is the service arm of 35 supporting Protestant denominations, in the area of acute human need, providing emergency and material aid to 8 million needy and hungry in 40 countries around the world.

Mr. MacCracken has been associate executive director of Church World Service and director of overseas program and director of the Church World Service immigration services program with executive responsibility for an activity that in 10 years has assisted more than 120,000 refugees to find homes in the United States.

He was chief of operations of the Tolstoy Foundation in Munich, Germany, where he dealt with the agency's resettlement and integration work involving refugees in Western Europe and the Middle East for 3 years prior to becoming executive secretary for 2 years.

Mr. MacCracken was a resettlement officer with the International Refugee Organization in Germany for 3 years where he also directed the Organization's resettlement center in Schweinfurt which provided services for 40,000 displaced persons in lower Bavaria.

From 1952–54 Mr. MacCracken served with the Intergovernmental Committee for European Migration in its offices in Germany, Trieste, and Salzburg. In the latter post, he was operations officer for Austria in charge of processing, transportation, and liaison with voluntary agencies and government officials in western areas of occupation.

In 1946 Mr. MacCracken went to Poland for 2 years, following military service with the Army Air Force Air Transport Command in the Pacific area.

A lektor in American literature and American civilization at the ancient Jagiellonian University in Cracow, he was also a lektor at Catholic University in Lublin in 1948. Students taking his courses in American literature were the first in Polish history to have majored in the subject.

James MacCracken is a member of the board of directors of the American Council of Voluntary Agencies, a director of the United States Committee for Refugees and a past director of the American Immigration and Citizenship Conference. A member of the United Presbyterian Church in the U.S.A., he is an active ruling elder. He is an officer in the Netherlands Order of Orange-Nassau.

A very distinguished career, Mr. MacCracken.

Mr. MacCracken. Thank you.

Senator Gruening. We are very happy to have you here. Please proceed in whatever way you think best.

STATEMENT OF JAMES MacCRACKEN, EXECUTIVE DIRECTOR, CHURCH WORLD SERVICE DEPARTMENT, DIVISION OF OVERSEAS MINISTRIES, NATIONAL COUNCIL OF THE CHURCHES OF CHRIST IN THE UNITED STATES OF AMERICA; ACCOMPANIED BY WILLIAM STRONG, DIRECTOR, PLANNED PARENTHOOD PROGRAM OF THE CHURCH WORLD SERVICE

Mr. MacCracken. Thank you, Mr. Chairman. I am most grateful to you. May I, sir, in the beginning, introduce a colleague of mine, Mr. William Strong?

Senator Gruening. Very happy to have you here.

Mr. Strong. Thank you, sir.

Mr. MacCracken. Mr. Strong is the director of the planned parenthood program of the Church World Service. He has been on this task working in the area of responsible family planning since January 1, 1965.

Much of the report which I shall present to you represents activity under Mr. Strong's direction.

Prior to coming to this post he was our field director for our program in Peru, and he set such a distinguished record in family planning in Peru that he brought himself to our attention as being an outstanding young leader in the area of responsible Christian family planning in the world.

He is just literally last night back from a field trip to Haiti.

Senator GRUENING. We are very pleased to have you present to the committee an account of your experiences and your work in Peru.

I visited Peru last year as part of a study of the foreign aid program there, and I think this will be very helpful to our whole discussion there.

Mr. STRONG. I would be happy to do so, sir.

Senator GRUENING. Either at this time or some future time, whichever is more convenient for you.

Mr. STRONG. Thank you, sir.

Mr. MACCRACKEN. Mr. Chairman, my name is James MacCracken, and I am executive director of Church World Service in the Division of Overseas Ministries of the National Council of Churches of Christ in the United States of America.

Mrs. Wallace has indicated that the division of overseas ministries is one of the four major components of the National Council of Churches' structure. It is this division which is charged with mission and service concern for our fellows and brothers overseas.

Church World Service itself represents the humanitarian and social concerns of the 30 constituent denominations of the National Council of Churches. During the past year we have conducted programs of relief, disaster response, rehabilitation, and self-help development in 37 countries of Asia, the Middle East, Europe, Latin America, and Africa.

I may say parenthetically, Mr. Chairman, that our promotion people tell me that in the 1966 calendar year we shall ship our four-billionth pound of food, medicines, clothing, technical equipment, and other material assistance to programs overseas.

These programs express the concern of American Protestants who speak through us to refugees, victims of disaster, and the hungry and homeless without regard to race, creed, or geographical location. We are in close fraternal relationship with and support the Division of Inter-Church Aid, Refugees, and World Service of the World Council of Churches, whose headquarters are in Geneva, Switzerland.

I personally have the privilege to be a consultant to that division.

SEVEN MILLION LIVING AIDED AS TWENTY-EIGHT MILLION ARE BORN

During the year just past Church World Service has touched upon the lives of some 7 million of the world's needy with food, clothing, and medicines. While we might feel a certain pride in that accomplishment, we confront another fact: in that same year, in the same countries where we had our programs, the growth of population surpassed 28 million persons. This is to say, sir, that human need outgrew all of our program assistance in sheer statistics. This, indeed, is part of the urgent necessity for food to fight famine already reported in the current press in India.

The true value of our contribution overseas, as for all responsible organizations whether voluntary or governmental, depends not only upon our recognition and acceptance of the facts of population growth and what they portend for the future, but upon our commitment to act upon the findings with urgency and effectiveness.

Mr. Chairman, I repeat, upon our own commitment, Mr. Strong has been particularly effective in challenging me and our colleagues at

home and abroad with the question: "What are you as a human being doing about this dramatic problem?"

"PROPHECIES AND PROGNOSTICATIONS OF POPULATION GROWTH HAVE BEEN EXCEEDED BY THE FACTS"

Last year, on June 3, the policymaking general board of the National Council of Churches adopted a resolution on world hunger. Population was no small part of the body of that resolution, which I quote:

> We see a tremendous urgency in matters of hunger and food, in relation to our Christian faith, to our concern with human values, to prospects for the world's food demand and supply during the next several years, and to basic economic and social development. . . . The explosive population growth, in contrast with generally slow increases in agricultural production, points toward more widespread human suffering from hunger in the years ahead.

In fact, sir, as you know, from the testimony which this subcommittee has heard, all of the prophecies and prognostications of population growth have been exceeded by the facts of reality.

THE PRESIDENT AND CONGRESS URGED ". . . TO TAKE THE INITIATIVE PROMPTLY . . ."

The National Council of Churches, therefore, in this hunger resolution called on the Government of the United States, acting through our President and our Congress, to take the initiative promptly to "increase support of governmental and private programs . . . utilizing new means that now exist, which from the point of view of technology and cost, may provide the opportunity of checking the population growth."

Mr. Chairman, we have been most gratified with the statements and the developing program emphases that have appeared in this field in official statements from our governmental leaders. We can hardly resist saying there is yet still so much to be done.

PLANNED PARENTHOOD OFFICE OF CHURCH WORLD SERVICE ENABLES PROTESTANT CHURCHES ". . . TO MAKE AS SIGNIFICANT A CONTRIBUTION AS POSSIBLE . . ."

Within our own church world service department, as I have mentioned, we have established the planned parenthood office under Mr. Strong's leadership as of the beginning of 1965. The purpose is clear. It is to enable the Protestant churches we represent, through their service and denominational activities overseas, both individually and cooperatively, to make as significant a contribution as possible in this contemporary field of challenge. Our office collaborates closely with the Christian Medical Council, another overseas unit of the division of overseas ministries of the national council.

Mr. Chairman, this first year of our planned parenthood program has been encouraging, and yet it is only such a small beginning to what the churches are potentially capable of contributing. We have felt, sir, that the other private organizations in the area of family planning have mechanical and supply techniques which are not utilized to their fullest.

TASK IS TO CATALYZE CHRISTIAN CONCERN

We see our Church World Service task as being one to catalyze Christian concern in the field. We feel that with thousands of devoted Christian workers abroad we must bring to their attention and concern the urgent need that they give their best creative and initial energy in the area of family planning, in terms of communications of resources which exist—medical stations, doctors and clinics—to which they can turn for competent technical advice.

Our goal, sir, is not so much in the reduction of population in the negative, but to make our presentation through Christian fellows that we are seeking healthy children, wanted children, within the feasibility of the family home.

AID GIVEN TO 200 CHURCH-RELATED DOCTORS IN 39 COUNTRIES ". . . FOR INTRAUTERINE CONTRACEPTIVE WORK"

We have begun to supply over 200 church-related doctors in 39 countries with full professional information and supplies for intrauterine contraceptive work. These doctors are located in Asia, Africa, Latin America, and the Middle East. We shall continue to supply these doctors, upon their request, until such time as there are indigenous sources of supply readily accessible and fully available to them.

Reports on current research and changes in practice are sent to these doctors periodically by Mr. Strong. Beyond this, through our traditional shipping facilities of the Church World Service, we have made 10 large shipments of a contraceptive aerosol foam to 7 countries during the past year, and these are shipments which are made for the third and fourth year to some of these countries.

So as to foster the production and use of relevant educational materials we have shared more than 19,000 samples of family planning leaflets and booklets from one country to another. These have reached correspondents in 66 countries. The object here was not to provide sufficient quantities of literature for actual use, but rather to present examples of the types of materials that have been produced elsewhere in order that we might encourage local adaptation and publication.

GOAL: TO REACH THE DESPERATE WOMAN

Our goal, sir, is to reach that woman in the village who with five children is awaiting a sixth and is desperate because she does not know how to feed her children then or in the future.

The churches, like governments, have been extremely active in the sharing of medical progress. Hospitals and clinics, medical personnel, and programs in nutrition have all fostered an energetic dissemination of the progress of modern medicine about the world. These humane efforts have, at the same time, contributed substantially, I might say, to the rapid drop in mortality, which is one of the outstanding bases for what we call the population explosion, as you know. Today's moral imperative is that we be equally energetic in sharing responsible family planning. In the second year of our planned parenthood program we shall focus particularly on the more than 1200 church-related medical facilities—in every continent—which must be updated and extended to tackle the task of providing more extensive and effective family planning services.

EXTEND THE IDEA OF FAMILY PLANNING

The churches are concerned not only with this sharing but with the manner in which it is undertaken. "How" we make our contribution is as important as the substance of it. Responsible family planning is not a foreign or alien idea in any part of our increasingly shrinking world. It is clear that there is a group in every society which has the benefit of both the idea *and* the means to practice it. The task is to extend the idea of family planning to those who are most in need of its help.

Here again I refer to the woman in the village, perhaps to which no road has ever reached, who, in the simplest human terms, is desperate.

"FROM THE FEW TO THE MANY"

The goal is to democratize this challenging idea from the few to the many. While overpopulation is a global or national focus, the overpopulated family is the explicit immediate reality, repeated thousands and thousands of times. The overpopulated family, seeing its need grow year after year out of all proportion to the growth of its resources, is a family facing continuing hopelessness. These basic human needs motivate our concern to respond as fully as possible.

We recognize, sir, that this is a sensitive, highly personal area. To be effective we need not only skilled medical techniques and skilled communication, but we need intent and advisable priority of concern for responsible family planning as the goal.

The time has long passed when international relief organizations, like mine, whose tradition has been largely feeding, can say that feeding is *the* primary task. Similarly, no responsible person is saying that family planning is *the* solution to all the problems of families and nations. We clearly need three approaches, in balance in oversea program—feeding of the refugees and needy, family planning is an important component in all we do, and a third point is that of the social and economic development, both short run nad long run, including projects of agricultural assistance and programs fighting root causes of hunger.

But for the very reason that both governments and voluntary agencies have not been highly active in sharing the idea of family planning, it is now even more urgent that this concern receive top priority. By promptly giving to responsible family planning at home and abroad the leadership and resources that it merits we can hope to shorten the gap between our rapidly improving policies and the realization of effective programs and make a tremendous contribution, Mr. Chairman, in this broadening gap between the societies that have and the societies that have not.

S. 1676 "WILL MEAN NEW AND HIGH-LEVEL LEADERSHIP"

We heartily wish to commend the principles inculcated in S. 1676 as we understand them. It is indeed time to turn from the "terrific indictments" of the population problem in theoretical language or in statistics to the concrete and significant next steps we must take in the way of solutions. The bill under consideration by this subcommittee, in proposing offices for population problems in both the Department

of State and the Department of Health, Education, and Welfare, each to be headed at an Assistant Secretary level, will mean new and high-level leadership as our Government endeavors to move meaningfully in this field at home and abroad. The proposal for a White House Conference on Population will focus further attention on the need for effective action.

Indeed, sir, this was clearly indicated in the recent White House Conference on International Cooperation. Concern, official and individual, for the growth of population was cited in panel after panel of that White House Conference, whether from the agenda or from concerned citizens from the floor.

Thank you, Mr. Chairman, for the privilege of sharing these comments with your subcommittee. It is our experience that the American people, learning facts of human need anywhere in the world, will respond dramatically. Hearings such as you are leading help to accomplish this sharing of information and help our entire national community of governmental and private concern to work more closely together.

Thank you, sir.

Senator GRUENING. Thank you very much, Mr. MacCracken, for giving us such a good picture of a very constructive and useful program. I have two questions I would like to ask.

These pamphlets and booklets which you distributed, could you make some specimens of those available to the subcommittee?

Mr. MACCRACKEN. It would be a pleasure, sir.

Senator GRUENING. I will at this time direct that the exhibits appear at this point in the hearing record.

(The literature above referred to follows:)

EXHIBIT 34

LET US PLAN FOR HEALTHY HAPPY CHILDREN

(Illustrated pamphlet describing the advantages of family planning, prepared by the Committee on Christian Marriage and Family Life of the Christian Council of Ghana, Post Office Box 919, Accra, and printed by Presbyterian Press, Post Office Box 3255, Accra, available in Ga, Fante, Twi, and English, supplied by Church World Service)

Why should we plan the birth of our children?

Because we want *our* home to be the happiest and healthiest home in Ghana.

Because when babies are born very soon after each other, they may not be strong and may die in infancy.

Because if the mother is always having children she will not be strong and healthy to care for the *whole* family.

Because the mother becomes very tired if there is not an interval between feeding one baby and conceiving the next.

Because the fear of unwanted pregnancies spoils the happy relations of husband and wife.

Because if we have too many children, we may fall into debt, and this will threaten the happiness of our home life.

We all want children but we also want:

To give each child the love, interest and care it needs.

To feed each child properly so that it will develop well.

To clothe our children decently.

To have a decent home with proper sleeping places for our children as they grow up.

To equip our children in character and training for life.

Can you do these if you have 8, 9, or 10 children?

In the old days, Perhaps . . .

BUT NOW

Many of us live in towns, so we cannot go to our farm for food to fill another mouth.

Food, School uniforms, firewood, extra rooms and bus fares—All Cost Money.

Can we plan the birth of our children?

Yes. There are several reliable ways to prevent conception.

You can use one of these after mother has delivered one baby, until you are ready to have another baby.

This is called "Spacing" your family.

You can use one of these when you have the number of children that you can care for properly, and when you do not desire any more.

This is called "Limiting" your family.

Who will help and advise us?

Any doctor will advise you, but there are two Medical Advice Centers for married couples which specialise in "Family Planning". They are staffed by women doctors and are held weekly. They have been set up by the Committee on Christian Marriage & Family Life of the Christian Council.

ACCRA

At present: At the Y.W.C.A. Hostel, Castle Road, Adabraka.
From 4–6 p.m. every Wednesday excluding public holidays.

KUMASI

What will it cost?

One payment of Ten Shillings and Six Pence (10/6d.) entitles you to any number of consultations at the Centre. If you can bring some extra cash you may be able to buy the equipment or medicine which the doctor recommends, *at the Centre*. These vary in price, from a few shillings to one Pound (£G 1) at present.

Christian Parents are Partners With God

In the creation of His Children.

Their love for their children expresses God's love.

Their care for their children expresses God's Care;

They are called to make God real to their children;

They are called to make a home in which Christ dwells;

They are called to rear children worthy of their Heavenly Father.

In This Important and Responsible Work

They are able to seek and receive God's guidance through prayer.

For which of you, intending to build a tower, sitteth not down first, and counteth the cost, whether he have sufficient to finish it.

Luke 14 v. 28

EXHIBIT 35

USTEDES PUEDEN PLANEAR SU FAMILIA

(Illustrated pamphlet in Spanish describing the advantages of family planning, supplied by Church World Service)

Ustedes Pueden Planear su Familia

Una familia planeada significa una vida mejor para Vds. y para sus hijos.

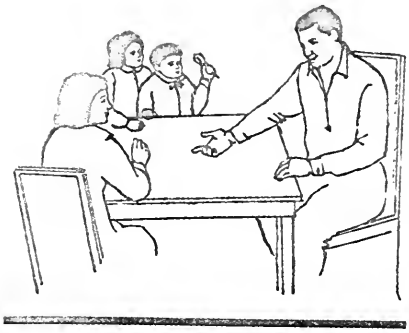
Planear su Familia es tener a sus Hijos sólo cuando lo deseen. Qué prefieren Vds.?

Esta?

Una familia planeada y confortable

O ésta?

Una familia sin planear, y con grandes dificultades

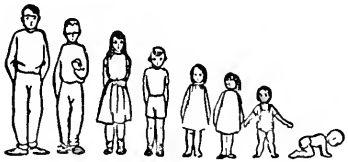


Solamente el ser humano sabe y puede planear su familia.

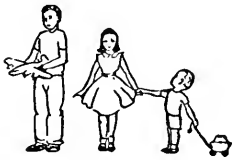
Es una virtud del hombre de verdad cuidar de su mujer é hijos.

El Jefe de la familia decide con su esposa cuantos hijos pueden criar y educar.

Muchos hijos, el uno tras el otro, debilitan a las madres y las vuelven enfermizas.



= Sin Planear



= Planeada

Las madres necesitan estar en buena salud para poder cuidar debidamente de los hijos que tienen.

Esta Familia planeó su futuro

Esta Familia no planeó su futuro

Cuantos más niños se tienen, Menos se les puede dar a cada uno.

Señor....
Señora....

Vds. desean asegurar para sus hijos:

un hogar confortable
buen alimento
buena educación

Será más fácil si planean su familia!

Planear su familia es fácil, inofensivo y cuesta muy poco.

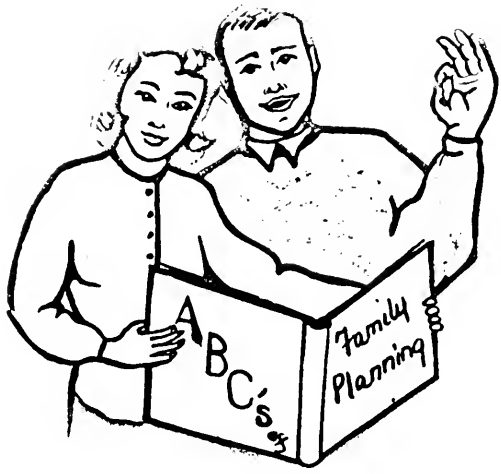
El hecho que usted haya leído este artículo indica que usted es persona de cierta educación, y por eso tal vez ya tiene conocimiento de los puntos expresados. Las personas más necesitadas son los que no pueden leer estas palabras, es decir, los analfabetos. Sería un gran servicio de su parte si usted se encargara de leer esta serie de artículos a los analfabetos en su vecindad.

EXHIBIT 36

YOU CAN PLAN YOUR FAMILY

(Illustrated pamphlet describing the advantages of family planning, published by the Planned Parenthood Association of the Southern Mountains, 113 Elliott Circle, Oak Ridge, Tenn., supplied by Church World Service)

You CAN PLAN Your Family



Family Planning means a better life for you and your children.

Family Planning: is having a baby only when you want one.

this?

or

this?

Planned and happy

Unplanned and in great need

Family Planning: is having only the number of children you can care for.

Family Planning is GOD'S way.

God loves each child

He wants a good life for each one. He does not want them to suffer from being unwanted or unloved, cold or hungry, or from not having enough schooling.

God says we must take care of them.

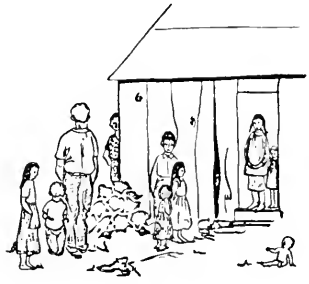
If there are too many children, all of them suffer and have less. We should plan the number of children we want and can care for. We should not have more than that number.

The small family means MORE for each.

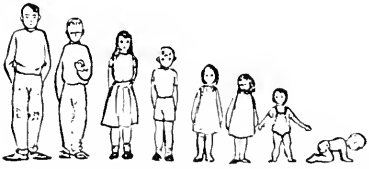
The big family means LESS for each.

The Planned Family

The Unplanned Family

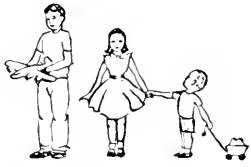


The MORE There Are, The LESS There Is For Each One.



= = unplanned

Too many babies wear mothers out and make them sick.



= planned

Mothers need to feel good,

so they can take care of the children they already have.

Family Planning is MAN-ly

It is manly to take care of your family

ANYONE can have babies . . .

Rabbits have them by the dozens . . . 12's

Fish have them by the millions . . .

1,000,000's

ONLY MAN CAN control
the size of his family
by Planning

Family Planning is CHEAP
at Planned Parenthood
it costs just
what
YOU
can pay.

So, for help in Family Planning,
Come, write, or call:

Published By
THE PLANNED PARENTHOOD ASSOCIATION OF THE SOUTHERN MOUNTAINS
113 Elliott Circle Oak Ridge, Tennessee

EXHIBIT 37

FAMILY PLANNING IN CHRISTIAN MARRIAGE

(Excerpts from a pamphlet discussing the importance of family planning within the context of a Christian marriage, and methods of contraception, published for the Christian Council of Nigeria by Daystar Press, P.O. Box 1261, Ibadan, Nigeria, Christian Home and Family Life Book No. 8, supplied by Church World Service)

INTRODUCTION

THE PURPOSE OF CHRISTIAN MARRIAGE

This book is written in the belief that family planning can make a vital contribution to the well-being and happiness of Christian people and to the success of their marriages. Some people refuse to have anything to do with family planning, because they say it is against the will of God. More will be said about this later. Here let us look briefly at what God intended when He gave us marriage, as far as we can understand it.

The purpose of Christian marriage is well summarised in the introduction to the Marriage Service in the revised Angelican Book of Common Prayer (1928):

"*First* it was ordained for the increase of mankind according to the will of God, and that children might be brought up in the fear and nurture of the Lord and to the praise of His holy name."

No Nigerian will quarrel with the statement that the first purpose of marriage is "for the increase of mankind." It is quite against Christian teaching for married people to refuse to have children because they wish only to enjoy themselves and to avoid the responsibilities of parenthood. But it is not enough for children to be *born*. They must be *brought up in the fear and nurture of the Lord and to the praise of His holy name*. This surely means that it is wrong to bring into the world more children than the parents have the means to feed and care for and educate. Christian homes swarming with ill-nourished, dirty, ignorant children do not bring honour to God's name.

"*Secondly*, it was ordained in order that the natural instincts and affections, implanted by God, should be hallowed and directed aright and that those who are called by God to this holy estate should continue therein in pureness of living."

In Matthew chapter 19 verses 5 and 6 we read our Lord's words: "A man shall leave his father and mother and cleave to his wife, and the two shall become one flesh; wherefore they are no more two, but one flesh. What therefore God has joined together let no man put asunder." The words *one flesh* refer to the act of sexual intercourse in marriage. It means that this physical expression of the love of husband and wife results in the joining together of their entire personalities. Sexual intercourse has, therefore, a purpose and value of its own, quite apart from the production of children. It is the means by which husband and wife give themselves wholly to one another and so keep up and develop the bond of love which joins them together.

"*Thirdly* it was ordained for the mutual society, help and comfort which the one ought to have of the other, both in prosperity and adversity."

This paragraph emphasises that there is far more in marriage than having children and sharing sexual experience. In it love is shown through companionship, friendship and understanding. Jeremy Taylor wrote: "By friendship I mean the greatest love, and the greatest usefulness, and the most open communication, and the noblest suffering, and the most exemplary faithfulness, and the severest truth, and the heartiest counsel and the greatest union of mind of which brave men and women are capable." Surely marriage is above all the place where we should find such friendship. Yet too often this relationship is spoilt, or endangered, through problems connected with the birth of children.

It is hoped that the suggestions made in this book will help many people to a richer and fuller married life, in which a responsible choice is made about how many, and how often children shall be born, and in which the love between husband and wife can be nurtured by sexual intercourse whenever they desire.

REASONS FOR FAMILY PLANNING

The health of the mother

Frequent child-bearing puts a heavy strain on a woman, and this may affect the happiness of the home.

A leading doctor has said that when a woman continues to have frequent and unplanned pregnancies, the effect on her can be the same as if she were suffering from a killing disease. It is certainly true in Nigeria that the health of many a woman suffers when she has many pregnancies, particularly when there is too short an interval between them. This is true for educated women who can afford modern medical care. How much more true it is for the less fortunate who do not have proper food and who do not, or cannot, have proper medical attention. There must be a large number of women who die every year in this country from the effects of pregnancies which they do not really want. In every pregnancy after the fourth it becomes more likely that something may go wrong during pregnancy or labour, particularly where trained helpers are not available. The use of contraceptives ensures that the couple can continue to enjoy their married life without endangering the wife's health.

The size of the family

It used to be true that every child in the family brought increased prosperity, because from an early age children took a share in the work of the farm and family. The coming of Western education has completely changed this, because school fees must now be paid for many years, and children's labour can no longer earn money for the family. Westernization has also brought the need for more clothing and other expenses such as better housing, electricity and the like. Modern medicine is able to save the lives of many children who might have died when these drugs were not available, but such medicine is costly, and so are the meat, fish and eggs which we now know to be necessary for health.

In Luke chapter 14 verses 28 to 30, our Lord commends the foresight of the man who counted the cost before building a tower, to be sure of being able to finish the job properly. Is not such foresight equally important for those of us who wish to build a family? Is it not wrong to bring children into the world whom we are not able to care for in the way we feel right? Is it better to have four well-fed, well-educated children, or ten who are undernourished, sickly and poorly-educated?

This is not to say that we should refuse to make sacrifices for the sake of our children. It is wrong and selfish for married people to refuse to have any children because they do not want to have to spend trouble and money on them. But it is equally wrong to continue to produce children when one is having difficulty providing for those already born. And to think, "Oh, my family will help to support them" is to show lack of true Christian responsibility. Why should I expect someone else to provide for the children I so unthinkingly bring into the world? This is not the kind of trust our Lord commends.

Preventing over-population

The population of Nigeria is increasing very rapidly, but this is a fertile land and so far there is still enough food for everyone. But if the increase continues at its present rate, the time will come before long, when the country cannot produce enough food for its people. This position has already been reached in many countries, for example in India, Japan and the West Indies. It has been estimated that only half of the people in the world today get enough to eat. The remaining half of the world's population are always hungry.

In 1958 there were 2,800,000,000 people in the world. This number will have more than doubled by the end of this century unless the present rate of increase is checked. The estimated world population for the year 2,000 A.D. is 7,000,000,000—seven thousand million. There is a tremendous need for greater food production to supply these enormous numbers of people. But unless the rate of increase is reduced by Family Planning it seems that we shall be faced by famine on a world scale.

The success of the marriage

In a polygamous home, it is easily arranged that a woman does not bear a child more often than once in every two or three years. It is very different where there is only one wife. In this case a couple who do not want a big family and who wish to remain faithful to their marriage vows have a choice to make. They must be ready to go for long periods without sexual intercourse abstinence, or they must use some form of birth control.

Many couples just leave it to chance. In this case the wife, anxious not to become pregnant again too soon, may be unwilling to have intercourse. If it does take place it will probably be unsatisfactory to both partners. The wife will be worrying about possible conception and so will not be able to respond whole-heartedly to her husband's expressions of love. The husband will feel she is lacking in affection. If a pregnancy should result, the wife may feel resentful or bitter towards her husband. If, on the other hand, the couple decide to abstain from sexual intercourse until they desire another child, they will be failing to fulfill one of the objects of marriage.

Either of these two attitudes may well drive the husband to seek other women outside the home, and so endanger the whole marriage. All this strain on the marriage relationship could be avoided if the couple could decide on a method of contraception and use it efficiently. Then pregnancy need come only when both partners desire another child, and intercourse can be enjoyed freely and without anxiety.

These are the main reasons for the formation of the Family Planning Associations which have been set up in many countries. They exist to make known the available methods of family limitation (birth control) and to provide clinics where doctors can advise on these matters.

One of the churches gives a lead

The following resolution was passed by the bishops of the Anglican Churches assembled at Lambeth, England, in 1958:

"The Conference believes that the responsibility for deciding upon the number and frequency of children has been laid by God upon the conscience of parents everywhere: that this planning, in such ways as are mutually acceptable to husband and wife in Christian conscience, is a right and important factor in Christian family life and should be the result of positive choice before God. Such responsible parenthood, built on obedience to all the duties of marriage, requires a wise stewardship of the resources and abilities of the family as well as a thoughtful consideration of the varying needs and problems of society and the claims of future generations."

The attitude of the Roman Catholic Church

At present the Roman Catholic Church permits its members to use only certain methods of family planning, which are referred to in detail later. This is on the grounds that appliances or drugs which prevent conception interfere with the nature of intercourse as ordained by God.

It is, however, reported that the whole subject of family planning is at present under discussion by the leaders of this Church, and there may possibly be some changes in attitude in the future.

The attitude of Islam

Muslims are divided over the question of family planning, because the subject is not mentioned in the Koran. The Koran rightly condemns abortion, as Christians do. But family planning is *not* abortion. Pakistan is the largest Muslim country in the world, and it actively supports family planning.

ANSWERS TO ARGUMENTS AGAINST FAMILY PLANNING

"It involves disobedience to the command of God to be fruitful and multiply and replenish the earth"

It is clearly against God's command to use contraceptives to avoid the responsibility of parenthood. But with the help of modern medicine and knowledge of hygiene, fewer children die young. It is no longer necessary to produce a very large number of children in order to be sure that a few will grow up. There are many homes nowadays where there are eight, ten or twelve children. Such families would seem to have contributed over-generously to replenishing the earth! In fact the earth has now been so replenished that there is a danger of there being too many people in it. It seems that most families will have fully obeyed this command when they contain three or four children.

"Contraception is unnatural"

People who put forward this argument usually base it on the view that the only real purpose of intercourse is to beget children. They say that intercourse which cannot lead to conception is not true intercourse at all. If we follow through this argument, it will lead us to say that intercourse is unnatural

during the so-called "safe period," during pregnancy, and after the age when periods cease, because at these times it cannot be followed by conception.

It is also argued that it is unnatural to put anything into the vagina which prevents complete contact between the man and the woman. It is certainly true that the use of the kind of appliances (described later) is distasteful to some people. But that alone does not make them wrong. We do many "unnatural" things—from wearing clothes to traveling in motor cars, or curing disease by the use of drugs.

It is not wrong to use these things because they are unnatural. Neither is it wrong to use modern scientific discoveries to remove the fear of unwanted pregnancies and to strengthen the bonds of marriage. God has given man the wisdom to discover these things. However, as the bishops pointed out in their message printed above, each couple must decide on what method of family planning to use in accordance with what they believe to be the will of God. No one should go against his or her conscience in this matter. Only let us be sure that we are listening to God speaking through our conscience, and not merely to the voice of superstition or prejudice.

"Our family is dying out, so we must have as many children as possible"

This argument must be considered with great sympathy. In many tropical countries half the children die before the age of five years, and this gives weight to the argument. In such a situation the first thing to do must be to develop child welfare service, so that parents will come to have confidence that their children will survive. Only then will they feel the need to plan a family with fewer children.

People may continue to present this argument even when welfare services have been improved. Then it will be found that it is more often the man than the woman who thinks in this way. Husbands who think like this should be on their guard lest they impose too heavy a burden on their wives. The father does not have to carry and bear the children, and it is not on him that the real burden of rearing them falls.

"If God sends us children, He will provide for them"

This of course is true in the sense that God has promised to supply the needs of His children. But it does not mean that one can continue to add to one's family without considering the consequences. God has given to parents the tremendous privilege of sharing with Him in the great act of creation. Surely He intends us to use this power thoughtfully and prayerfully.

Some people are confused by the words in St. Matthew chapter 6, verse 25, as translated in the Authorised Version: "Take no thought for the morrow. . . ." They think this means that Christians should leave all thought for the future in the hands of God. If we read the same passage in a modern translation, we find: "Do not be anxious about your life. . . ." The confusion is due to a change in the meaning of English since the older translation was made. The real teaching of this passage is that we should guard against anxiety, which is indeed evidence of lack of faith in God.

"Teaching about contraception will encourage intercourse outside marriage"

This is a real danger, and must be taken seriously. Some Christians feel so strongly about it that they consider it wrong for the Church to provide any information about birth-control. They would not wish a Christian body to be responsible for a book like this present one. To them we would make the following reply:

Every discovery of modern science has power for good or for evil, depending on how it is used. For example, if you are using medicine for curing malaria, and you take very much more than is recommended on the packet, it may make you ill. But no one would suggest that because of this we should refuse to tell people about medicine for curing malaria. The obvious thing to do is to give clear instructions as to the correct amount to use, with a warning against the danger of taking too much. In the same way, it is true that some young people may be tempted to use contraceptives so that they may indulge in sexual intercourse outside marriage without fear of pregnancy. Yet the benefits of contraceptives to married people are very great. It would be wrong to refuse to discuss them for fear of the risk to young people. Some risks have to be taken if we are to benefit at all from any scientific discovery.

Anybody who wants to find out about contraceptives nowadays can easily do so through secular agencies. They are on sale openly in many places. If the

Church remains silent it is failing in its duty to give positive help and guidance to its members on all matters concerning common life. Ignorance is a poor weapon to put into the hands of young Christians. We should seek to instruct them in matters of sex so that they will see that the advantages of chastity far exceed the temporary pleasures of immorality.

We should encourage young people to have healthy friendships with members of the opposite sex, based on shared common interests. They should be able to meet one another in places where they will not be tempted to make sexual experiments. Sexual intercourse must be presented to them as something far greater than a way of showing affection or of enjoying oneself. They must be helped to see that it has meaning only within the relationship of marriage where it builds up and strengthens the love between husband and wife. They should hear of the disappointment and unhappiness which so often follow intercourse outside marriage, even when no pregnancy results.[1]

More should be said about the dangers of venereal disease, which can usually only be passed from one person to another during sexual intercourse. These diseases can be acquired whether or not contraceptives are used. *Gonorrhoea* produces symptoms in men within a few days of intercourse with an infected woman. It can usually be cured by prompt treatment given by a competent doctor. If left untreated it can lead to permanent ill-health. In a woman this disease may develop for some time unnoticed, until serious damage has been done to her reproductive organs, sometimes making her permanently unable to conceive.

Syphilis is more slow to develop and can have very serious consequences on the heart, brain or spinal cord in both sexes. An infected, untreated mother may pass on the disease to her unborn child, perhaps many years after she first contracted the disease. The child may be born dead, or may die after a few weeks or months. If he survives for some years he will probably develop one of the severe adult forms of syphilis. These diseases can be certainly avoided only by refusing to have intercourse with anyone except a healthy marriage partner.

Perhaps the fear of these diseases can be used to discourage people from indulging in unrestricted sexual intercourse, when they are not deterred by fear of pregnancy, nor influenced by proper sex instruction.

TERMS USED IN THIS BOOK

Family Planning.—Deciding how many children to have, and when they shall be born into the family.

Conception.—The joining of the male sperm cell with the female egg cell inside the mother's body, so that a baby begins to grow.

Contraception.—Prevention of conception.

Contraceptive.—Something which prevents conception while allowing sexual intercourse to take place.

Birth Control.—Preventing the birth of live children by the use of contraceptives or by other methods.

WHERE TO OBTAIN ADVICE ON FAMILY PLANNING

Hospitals and Clinics in Nigeria where advice on Family Planning is given include the following. At those marked ** the new intra-uterine device can be obtained.

Lagos

Family Planning Clinic, Public Health Department, 42 Broad Street, Lagos** Fridays at 5.0 p.m.

Family Planning Clinic, John Street Health Centre, Lagos.** Wednesdays at 5.0 p.m.

Family Planning Clinic, Randle Street Health Centre, Lagos.** Tuesdays at 5.0 p.m.

Western Region

Baptist Hospital, Ogbomosho. Advice given on request at General and Maternity Clinics, Monday to Friday.

Wesley Guild Hospital, Ilesha.** Mondays, Tuesdays, Wednesdays and Fridays at 7.0 a.m.

[1] The booklet in this series called *Friendship Between Boys and Girls* can be highly recommended to all who want further advice on this subject.

Methodist Maternity Hospital, Ikole-Ekiti.**
Methodist Maternity and Child Welfare Centre, Imesi-Ile.**
Ile Abiye Maternity Hospital, Ado Ekiti. Advice given on request.

Eastern Region

Queen Elizabeth Hospital, Umuahia—Family Planning Clinic.
Methodist Hospital, Ituk Mbang, near Uyo. Advice given on request.
Iyi Enu Hospital, Ogidi, near Onitsha. Advice given on request.

Northern Region

S.U.M. Hospital, Takum, via Makurdi.**
In case of difficulty enquire at the nearest hospital, or write to the Gynaecologist, Wesley Guild Hospital, Ilesha.

CONTRACEPTIVE PRODUCTS AVAILABLE IN NIGERIA

The following products are known to be obtainable from one or other of the larger firms of retail chemists in Nigeria, and can be recommended as safe and reliable. Other products also approved by the British Family Planning Association are listed at the end, although they may not be readily obtainable in this country.

The prices given are those current at the time when this book was published. In cases where there is variation in the prices charged by different firms, both prices are given.

Barriers between Sperm and Egg

Sheaths: Durex—2/6 per packet of 3
Durex Gossamer—1/– per packet of 3

Rubber Caps: Ortho Diaphragms—18/6 each. They are made in various sizes and it is very important to be measured by a doctor to be sure of the exact size required.

Preparations for killing Sperm

Foaming Tablets: Gynomin tablets—3/6, 4/– per packet of 20
Volpra tablets—3/9 or 7/–
Rendell foam tablets—3/9

Contraceptive Creams:
Volpar Paste:—7/– (with applicator, 13/6)
Preceptin Cream—10/6, 11/6 (with applicator, 14/6, 16/–)
Ortho Cream—10/3 (with applicator, 13/6)
Delfen B Cream—11/6

Contraceptive Jellies: Orthogynol—9/3, 10/3 (with applicator, 12/3, 13/6)

Oral Contraceptive Tablets (taken by mouth)

These must be taken only under doctor's supervision. The prices given are for one month's supply.

Anovlar—14/–, 14/6
Conovid—23/3
Conovid-E—13/9
Lyndiol—13/9
Noracyclin—13/9, 14/–
Norlestrin—13/6, 13/9
Ortho-Novin—13/6
Ovulen—13/9
Volidan—15/–, 15/6

Other approved brands

Sheaths: Lambert, Transyl, Silvine, Lion, Prentif
Caps: Lambert, Durex, Prentif
Foaming Tablets: G.P. Solubles, Bymeston
Pastes and Jellies: G.P. Ointment, G.P. Jelly, Contraceptalene, Duracreme, Prentif Spermicidal Compounds, Staycept Cream, Staycept Jelly.
Oral Tablets: Previson, Gynovlar.

OTHER RECOMMENDED BOOKS

"Friendship Between Boys and Girls," Price 6d, by post 7d
"Twenty Awkward Questions and Twenty Frank Answers," Price 6d, by post 7d
"Getting Married?" Price 1/6d, by post 1/7d
"A New Child is Born," Price 2/–, by post 2/1d
"Take Care of your Baby," Price 2/–, by post 2/1d
Obtainable from the Publishers, Daystar Press, Box 1261, Ibadan, Nigeria.

Senator GRUENING. I notice that you say that one of your shipments you make is of contraceptive aerosol foam. Do you use other contraceptives in your programs?

Mr. MACCRACKEN. Yes, sir. The primary contraceptive device which we are designating both in information and competent medical packages from pharmaceutical houses is the intrauterine loop. In most of the program areas, sir, in which Church World Service is involved, we have many basic problems. One is that the primary concern for responsible family planning, as you noted in your own study in Peru and Haiti, is a concern carried by the woman, not by the man. The second problem is one of personal hygiene, not so much based upon nonunderstanding or education, but on the plain lack of water. For these two reasons and for many others, it has seemed to us that the intrauterine device is the finest approach to responsible family planning.

We do not suggest it before and in lieu of all other methods, but we do feel that it is a major technical breakthrough and, sir, in a time when in the hospitals of Santiago, Chile, more than 30 percent of the beds are occupied by botched abortion cases, when more than 40 percent of all the blood transfusions in the medical services of Santiago, Chile, are to repair abortion cases, we feel that the intrauterine device is a magnificent scientific breakthrough.

Senator GRUENING. Thank you very much, Mr. MacCracken. This is a very stimulating presentation that you have made, showing the real work that is being done in this field, and apparently being done very effectively.

Mr. MACCRACKEN. Thank you, Mr. Chairman.

May I submit for the record the report which Mr. Strong has prepared upon the conclusion of his service in Peru in answer to your initial comment and invitation to him?

Senator GRUENING. We will be very happy to have that. I shall direct it be printed in the hearing record at this point.

(The report referred to above follows:)

EXHIBIT 38

COMISION DE AYUDA SOCIAL: RESPONSIBLE PARENTHOOD

(By Bruce D. Carlson, Church World Service Representative, Peru, December 1965)

GENERAL FACTS ON PERU AND NOTES ON RECENT DEVELOPMENTS

Peru is the fourth largest country in Latin America; the estimated population is 11,700,000

With a population growth rate above 3 percent (one of the highest in the world), the population will triple by the year 2000

About 60 percent of the labor force is employed in agriculture, although there is less than one-half arable acre per person—third lowest in Latin America

Per capita food consumption is about 2000 calories per day

About 60 percent of the townships have no electric service; only 11 percent of the population has adequate housing; and 66 percent of the roads are unpaved

Less than one-half of the population over seven years of age is literate; one-third of the people do not speak Spanish, the official language

There is one doctor per 2,240 inhabitants

One of every two deaths occur among children four years of age or younger, mainly infant mortality

Life expectancy has increased from 34 to 57 since 1940

About half the population is under 15 years of age

Urban growth, due primarily to migration from rural areas, is straining the available resources and services; Lima, the capital, has grown six-fold since 1940.

The Protestant community represents less than 1 percent of the total population.

The Peruvian Government prohibits the manufacturing or selling of contraceptives. Based on the Hall report and common drugstore knowledge, it is obvious that the law is not strictly enforced. The executors of the law appear to have a greater sense of reality and responsibility than the legislators.

Due to the limitations of the Roman Catholic position on family planning, it cannot at present serve as an effective agency in the field of family planning.

Although the Peruvian Government has upheld the Catholic Church's position, President Belaunde, by Presidential decree, estabilshed a Center for Studies of Population and Development which was inaugurated in January of this year The Center's function will be to study demographic trends as they effect the current resources available and future need. The institute will conduct a Seminar on population in December.

A Symposium on Population, organized by a young, astute group of doctors connected with one of the Lima medical schools, was held the last week in April. Demographers, economists, planners, sociologists, and doctors took part. From the many problems revealed it was evident that Peru has a population problem.

Eugencies and Population was one of the themes discussed at the Congress of Municipalities held in Arequipa in early August. The committee made two recommendations which were approved by the general assembly: that family planning be promoted within the principles of Western civilization and the postulates of the Catholic Church, and that further study be made regarding scientific developments, as well as moral and social considerations, etc.

"Caretas," a leading Peruvian magazine, has responsibly followed demographic developments in Peru and throughout the world. Its fourth article on the subject in the last two years in May was entitled the "Humanization of Motherhood." It touched on the problem from many aspects, including the IUDs, and advocated a greater understanding of the meaning of motherhood.

The newspapers have devoted a greater number of articles to the problem of hunger, housing, and other needs caused partly by the rapid rate of population growth. Usually, the solution is found in a better distribution of income. There has been much controversy concerning the oral birth control pills. Interestingly enough, most of the debate has centered on the medical considerations rather than the moral or religious issue.

BACKGROUND: SEPTEMBER 1962–SEPTEMBER 1964

In the latter part of 1962 the Comision de Ayuda Social, while seeking new areas for meaningful, long-range work, discovered that the Peruvian Protestant community was largely unaware of any distinctive Protestant position on family planning. This finding became the initial stimulus for beginning an educational program in what was positively termed "Responsible Parenthood." Two leaflets were prepared: the first defined a Christian position on family planning, and the second explained five relatively inexpensive contraceptive methods. In the first year (end April 1964) 24,000 copies were distributed throughout Peru and to several other Latin American countries.

The Comision also made available two simple contraceptives, foam tablets and aerosol foam. These were distributed through medical personnel and church leaders, or directly to users.

At the end of 1963 the Comision selected two Peruvian doctors to attend a medical conference in Santiago, Chile. The recent developments in this country encouraged the doctors to begin the use of intra-uterine contraception when they return to Peru.

Educationally, the Comision's program also included numerous showings of a film on family planning produced in Puerto Rico and the holding of a one-day Institute on Responsible Parenthood for women in Lima and the nearby cities.

As these undertakings developed, the Pathfinder Fund generously gave of its knowledge, literature, supplies, and financial assistance. The most crucial support, however, then as now, came from the positive response of the Peruvian people.

The Responsible Parenthood Program of the Comision de Ayuda Social has evolved into project consisting of three basic aspects:

1. educate, inform, and provide relevant printed materials,
2. distribute two simple contraceptives,
3. enlist doctors to promote intra-uterine contraception.

The Comision is now distributing four family planning leaflets to educate, inform, and enlighten families, especially among the teeming masses, who wish to curtail their family size. The Christian position is expressed in the "Christian Concept of Responsible Parenthood." Another leaflet, "You Can Plan Your Family," graphically illustrates the value of being responsible parents. "To Be A Father, To Be A Mother," pictorially with simple explanations describes the conception of a child and presents the different available contraceptive methods. The last, "What are the IUDs," briefly explains the plastic intrauterine devices. Approximately 7,000 leaflets per month are presently being distributed to all parts of Peru and to a number of Latin American countries.

The Comision is presently producing, with the financial support of World Neighbors, a series of four filmstrips on the subject of responsible parenthood. The first filmstrip, "The Magic Morter," is a Spanish adaptation of the original prepared in Taiwan by the Population Council. It shows the need for, or rather lack of, responsible parenthood. The "Birth of a Child" is a colorful presentation of conception and labor based on a production of the Maternity Center Association. This third, yet untitled, presents the population problem as it effects the world in general and Latin America in particular. The problem of a small, rural village and the comparison between two families, one of which is responsible, are strikingly presented. The fourth will explain methods, emphasizing the intrauterine devices. Each filmstrip is accompanied by a record and text. Plans have been initiated, with the interest and help of other agencies, to promote the filmstrips in other Spanish-speaking countries.

The availability of leaflets and audio-visual materials has made it possible for the presentation of effective *charlas* (talks) before many groups. The audiences have varied considerably, at times all male or female, mixed groups, Protestant and Catholic, a political party, with numbers reaching as high as 250. Along with the leaflets, a reprint (August 1964) from "Caretas" on abortion and desired family size is handed out. Probably the most sought after literature is a little publication called "Where Do I Come From, Mommy." The booklet advises parents on how to offer sexual education to their children.

One of the projects of the Comision this year has been to establish regional social service committees. These committees have expressed great interest in family planning, and the Comision is providing each with the materials available, and, when possible, a projector.

The distribution of the two simple contraceptives is done through medical personnel, church leaders, regional committees, and interested women. (Many of the latter attended the one-day Institute on Responsible Parenthood.) Although the number of foam tablets distributed has been nominal, the Comision has aided approximately 1,000 families with the aerosol foam. The acceptance of the latter has been widespread, i.e., used by families in the jungle, the Sierras, and on the coast.

When possible, however, the Comision has suggested the use of the intrauterine devices. In the last year 45 doctors have agreed to collaborate with the Comision in regard to the IUD's. The doctors are located in fourteen cities in Peru. The majority practice medicine in private *consultorios*, while the rest are divided among missionary doctors, company doctors, and several who work in government hospitals or health centers.

The doctors, while providing a practical solution to a pressing family problem, are conducting a study (with Lippes loops) in cooperation with the Pathfinder Fund. The latter provides the IUDs gratis upon receiving a letter from the doctor expressing his desire to collaborate with them. (Peru is one of 62 countries where the Pathfinder Fund is promoting the use of intrauterine contraception.) The Comision has published a little booklet for the doctors called "Instructions and Reports on IUDs." Due to the scarcity of materials prepared in Spanish on the subject, the doctors are most appreciative. Doctors may also request copies of the "Proceedings of the Second International Conference on Intrauterine Contraception."

It is estimated that more than 200 loops have been placed in the last year. Since many of the doctors have just recently begun, it is anticipated that the number of insertions will rise sharply during the coming months.

Two developing possibilities could prove of great significance and value for the future. The first concerns the projection of the filmstrips, excluding the one on methods on regional TV in northern Peru. The plans include the use of a doctor and sociologist to discuss and interpret the importance and meaning of the filmstrips.

The second concerns a factory two hours south of Lima. By Peruvian Law, all companies are required to employ a full-time social worker. The effectiveness

of such workers varies greatly. In this particularly company, the owner and social worker have established what may be truly called a social service program for the *obreros* (workers) and *empleados* (clerks). The program includes milk for the workers' children, a 50–50 matching fund, and a special fund for emergency cases. "Even with all the company aid, the people will never be able to pull themselves up as long as they continue to have 10 and 12 children."

In the next few weeks, while doctors are being contacted to collaborate with the company, the social worker will distribute the leaflets among the people in order that they may begin thinking about their present situation and their role as responsible parents. The mixed meetings of 25 to 30 will be organized for *charlas*, using the filmstrips, and so forth. Family budgeting, child raising, and the importance of education will be stressed. The significance of instituting such a marginal benefit for the company's workers is immeasurable. It should prove most interesting.

My personal convictions and strong feelings on the matter have been constantly bolstered by the overt response of the Peruvian people. They want to be responsible parents. Usually, they just do not know *how*.

Along with the generous backing of the Pathfinder Fund and World Neighbors, the Comision has had the wonderful moral and material support of the Population Council and American Friends Service Committee. Together, we are trying to get a program in action.

Senator GRUENING. Mr. Strong, if you would like to make any additional comments we would be very happy to have them either now or at some future time, whichever you prefer.

Mr. STRONG. I would just like to add that these hearings are a marvelous contribution in that you have listened so patiently to so many types of people and their positions. Out of this healthy discussion I hope we can in many ways move from the high level of verbal progress that we are making down to the actual realization of the services that will help people.

HAITI MAKES GREAT STRIDE FORWARD

The trip to Haiti from which I have just returned gives me great hope that people can cross all sorts of supposed barriers regardless of how these are described. With tact and sensitivity we can help each other realize our common goals. In the church-related institutions in Haiti a great stride forward has been made in just the last 6 months, and this has all been done in close cooperation with growing Government interest in actual practice in this field. They are using devices which we happen to have supplied, and it is an encouraging development.

I think so often "reluctancees" that come into this field are based upon people not having really tried to go to work and to use their God-given skills to work with each other. We suppose this work is going to be more difficult than in fact it turns out out to be once we get started.

Senator GRUENING. Does the material you are presenting include your experience in Haiti or just in Peru?

INFORMATION AVAILABLE IN CREOLE FOR HAITIANS

Mr. STRONG. Well, I have available a report that my successor in Peru did which really sums up the work that has been done there for over 4 years. I think the Haiti experience, from which I am just back, I can sum up in a few paragraphs. One of the encouraging aspects of what is happening in Haiti is the development there of an attractive leaflet in Creole, done for newly literate persons. A subsequent leaflet

will be done in French. The first leaflet was done by Protestants but the Government is happy to have it and is happy to use it.

So I can include both of these countries in a subsequent presentation.

Senator GRUENING. I will appreciate your doing that. Does President Duvalier encourage this program?

Mr. STRONG. I think so. I think he is very much for this. He is concerned that people be helped. I think we are on a good working basis.

Senator GRUENING. Could you let us have a copy of this pamphlet in Creole?

Mr. STRONG. I will be happy to.

Senator GRUENING. I will direct that the Creole pamphlet and its English translation be printed in the hearing record at this point in my remarks.

(The material referred to follows:)

EXHIBIT 39

MÉSIÉ BENOIT AK MADANM LI

(Illustrated pamphlet in Creole distributed in Haiti to explain family planning through the use of the intrauterine device, published by the Comite Protestant D'Alphabetisation, Haiti, 1966)

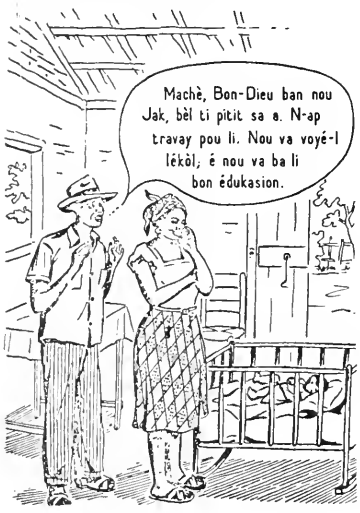
MÉSIÉ BENOIT AK MADANM LI

COMITE PROTESTANT D'ALPHABETISATION

HAITI 1966

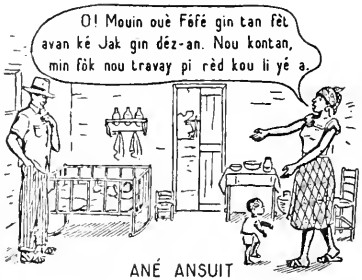
-1-

Aprè gnou ané mariaj, mésié Benoît ak madanm li té byin kontan ouè ké Bon-Dieu té ba yo bénédiksion gin prémié pitit yo a.



-2-

ANÉ ANSUIT



ANÉ ANSUIT

-3-

-4-

-5-
Madan Benoît, ou trè saj pou vi-n mandé konkou. Ou-minm ak mari ou nou sé bon papa, bon manman. Map édé nou fàsilman. Gnou ti aparèy yo rélé FILAMAN va pèmèt nou pa fè tròp pitit.
DOCTEUR
Doktè, eské li va fè-m mal ?
NON
Eské-l va jinnin-m ?
DU-TOU
Eské-l va kòzé-m du tò ?
Lé kontrè
Eské anpil moun métê-l ?
Anpil nan tout péi trèz alèz, tout moun kontan konkou sa a.
DU DOCTEUR

-6-
Benoît, dépi-m métê FILAMAN mouin santi-m byin. Kóun yé a, mouin pa pè, mouin pap ansint-mouin kapab travay
Sé pi fasil pou-m travay, paské-m ouè ké map ranpli dévoua-m anvè fanmi-m. Nou va dégajé-n avèk sa nou gingnin pou élvé ti moun yo byin.

- 7 -

EXHIBIT 40

MR. BENOIT AND HIS WIFE

(English translation of Creole pamphlet, published by the Protestant Literacy Committee, Haiti, 1966, and translated by Church World Service)

P. 1: After a year's marriage Mr. and Mrs. Benoit were very pleased that God had given them their first child.

"Mr. B: My dear, the good Lord has given us Jacque, a beautiful child. We will work for him. We will send him to school and give him a good education."

P. 2: The following year.

"Mrs. B. Oh! I see that Féfé is born before Jacque is two years old. We are pleased but we must work harder."

The year after that.

"Mr. B. Dear me, I am surprised that Pol is born before Féfé is able to walk well. Life is hard. And the children have taken all my courage."

P. 3:

"Mr. B. I cannot send them to school.

"Mrs. B. Children must eat.

"Mr. B. Children must have medicine. Where can I find clothes to clothe the children?

"Mrs. B. You need not be discouraged. I will help you to work."

P. 4:

"Mr. B. My dear, I am discouraged. Go and talk to Mrs. Jean and find out why is it that she has only three children.

"Mrs. B. I want to be a good mother, but if I have more children I cannot do anything good for them. And with my poor health it is going to be terrible for me. If I do not get help I will die and leave them.

"Mrs. J. Mrs. Benoit, listen. I was married before you. Thanks to the family planning center I am very much at ease about this problem. Go see the doctor."

P. 5:

"MD. Mrs. Benoit, you are very wise in coming to seek help. Your husband is a good father, and you are a good mother. I will help you. It is very easy. There is a small appliance that is called a 'filament' that will enable you not to have too many children.

"Mrs. B. Doctor, will it hurt me?

"MD. No.

"Mrs. B. Will it annoy me?

"MD. Not at all.

"Mrs. B. Will it do me any harm?

"MD. To the contrary.

"Mrs. B. Do many people have it put in?

"MD. Many. In every peaceful country all are pleased to receive this help."

P. 6:

"Mrs. B. Benoit, since I have had the filament put in I feel much better. I have no fear. I am not pregnant. I can work.

"Mr. B. It is much easier for me to work, because I see that I am doing my duty to my family. With this aid we can now work hard to raise our children well."

P. 7:

"BOTH. We are telling you. Seek the aid of family planning. We went and now we are very much at ease and contented."

Senator GRUENING. Of course, the illiteracy is so high in Haiti I imagine most of this has to be done by word of mouth?

ONE INDIAN WOMAN SPREADS THE WORD TO A HUNDRED FRIENDS

Mr. STRONG. Of course, this is the great advantage of a one-decision contraceptive like the IUD. A woman after numerous children would have great motivation to finally deal with her problem, and she can be helped when her motivation is highest. Former methods have meant that she might indeed try to do something about it, and then she might be lucky or unlucky and her motivation would fluctuate. So here she is helped, and, in fact, in most parts of the world the best education that is done in behalf of this method is done by the person who has accepted it who in turn tells her friends and neighbors.

When I was in New Delhi I heard of a woman who had sent to one of the centers there over 100 of her friends and relatives just out of her satisfaction that she could indeed be helped and was helped.

Senator GRUENING. How is the work in Haiti organized? Do you have a number of doctors or nurses or midwives or others that go out and give this information?

". . . ALL WHO ARE DESIROUS OF HELPING ARE DOING SO . . ."

Mr. STRONG. There are a number of church-related institutions. These are in Port-au-Prince and in the rural areas. The government now has inserted the better part of 100 devices in a hospital called Three Babies. They are planinng in their general hospital a pilot study using the device.

We hope that through Protestant auspices one or two or more additional clinics can be established in Port-au-Prince.

So this is a collaborative arrangement in which all those who are desirous of helping are doing so, and our Embassy there is kept informed of what is happening. Everyone is in on it, and we are working in real collaboration, I would say, at this point.

Senator GRUENING. That is very gratifying. Thank you very much.

Mr. STRONG. Thank you, sir.

Mr. MACCRACKEN. Thank you, sir.

Senator GRUENING. I direct that a memorandum describing the family planning program in Haiti and sent to us by Mr. Strong be included in this hearing record.

(The memorandum mentioned above follows:)

EXHIBIT 41

MEMORANDUM DESCRIBING THE FAMILY PLANNING PROGRAM IN HAITI

(By William D. Strong, Director, Planned Parenthood Program, Church World Service, February 11, 1966, Subject: Haiti Trip Notes, February 3–8, 1966)

NATIONAL COUNCIL OF THE CHURCHES OF CHRIST
IN THE UNITED STATES OF AMERICA,
February 11, 1966.

Office memorandum to: David Stowe, Hugh Farley, James MacCracken, Don Lubin, Luis Leite, Francoise Hall, Lorraine Cleveland.
From: William D. Strong, Director, Planned Parenthood Program, CWS.
Subject: Haiti Trip Notes, February 3–8, 1965.

The Haitian Ministry of Health, Department of Social Welfare, began, during January, intrauterine contraceptive work. 67 intrauterine devices were inserted, using loops supplied through Church World Service.[1]

In nine church-related medical institutions, largely outside the capital city of Port-au-Prince, approximately 1400 loops have been inserted to date. These efforts began in the latter half of 1965.[2]

The Haitian Government plans to include more work under the Department of Social Welfare and a more extensive pilot project in the General Hospital, Port-au-Prince. In 1966 the church-related medical institutions will extend their work in this field. Plans are being developed for one or two church-related family planning clinics in Port-au-Prince.

A Creole leaflet, copy attached, was prepared by the Protestant literacy committee and printed by the Nazarene printing shop. A second leaflet, in French, on a somewhat different level, is in preparation. The Creole leaflet has been warmly welcomed by officials of the Haitian Government.

Word of these developments is being fully shared with the Haitian Government, the voluntary agencies, the Protestant community, and the U.S. Embassy.

Senator GRUENING. I would like to take a moment to direct that there be placed in the record of these hearings an article from the St. Louis, Mo., Globe-Democrat. This article describes the panel discussion on birth control sponsored by the American Newspaper Women's Club in Washington, D.C. on Wednesday, January 12, 1966. Dr. Alan Guttmacher, Dr. Irene Taeuber, and Mr. William Ball—all former witnesses before this subcommittee—and I had a stimulating exchange of ideas about the population crisis. The subcommittee

[1] It is reported that 400 Haitian doctors are presently in the U.S.; 50 additional doctors are in Montreal.
[2] One institution reports that its IUD acceptors have averaged 30.5 years and 5.1 children.

thanks Mrs. Vera Glaser of the North American Newspaper Alliance, for making this newspaper report available to the subcommittee.

(The material referred to above follows:)

EXHIBIT 42

FOUR EXPERTS' VIEWS—WHAT SHOULD UNITED STATES DO ABOUT BIRTH CONTROL?

(By Women's News Service, the Globe-Democrat, St. Louis, Mo., Jan. 28, 1966)

WASHINGTON.—Should the Government be involved in birth control?

Is "the pill" really safe?

What are the communists doing about the population explosion?

Will the Catholic-approved method be included in a pending bill to provide birth-control information?

Four of the nation's leading authorities on population and birth control—a physician, a U.S. senator, a prominent Catholic layman and a woman population expert—met recently in the capital to discuss these controversial questions.

Their exchange of views came at a time when President Johnson twice, within a one-week period, called for pioneering new actions by the U.S. to help stem the world's rising tide of births.

The verbal free-for-all was moderated by Vera Glaser, Women's News Service Washington Correspondent, in a program sponsored by the American Newspaper Women's Club of Washington.

Participants were Senator Ernest Gruening, D. Alaska, sponsor of a bill to coordinate and disseminate birth control information; Dr. Alan F. Guttmacher, President of Planned Parenthood—World Population of New York; Mr. William B. Ball of Harrisburg, Penn., Special Counsel for the National Catholic Welfare Conference; and Dr. Irene B. Taeuber, senior research demographer, Princeton University.

DISCUSSION HIGHLIGHTS

Highlights of the discussion follow:

MRS. GLASER. Until recently the subject of birth control was taboo. Nowadays we rarely open a newspaper or switch on a radio or television set without finding some reference to it. Behind it all, of course, is the population explosion. In 1920 the world's population was less than two billion people. In 1960 it zoomed to almost three billion and, if present trends continue, the population at the end of this century will be 7½ billion men, women and children.

Can the resources of the earth support such a load of humanity, and what should we do about it? President Johnson has called the population explosion humanity's greatest challenge, second only to the search for peace. On at least five occasions, most recently in his State of the Union message, he has directed the nation's attention to it.

Dr. TAEUBER. There are no easy solution in this area. The emergency will become chronic. It will have no end. It can lead only to ultimate failure unless birth rates are reduced sharply and in the not too distant future.

Even if the population of the world should follow the United Nations median trend, which means cutting birth rates in half in the remainder of the century, it would require a doubling of the world's food production to maintain present levels of nutrition.

The critical problem is not birth control or increased food production. It is comprehensive development, including family planning and education, particularly for women.

NOTHING DRASTIC

Senator GRUENING. My bill is moderate, an entering wedge into a problem which should have concerned us much earlier. It provides for two new assistant secretaries—one in the Department of Health, Education and Welfare and one in the State Department—to meet the burgeoning demands for information on the details of birth control.

The bill also aims to have a White House Conference in 1967 to discuss this problem. There is nothing drastic, radical or compulsory about this bill. It would make information concerning contraception, limitation of birth, available to those who want it.

No one is obliged to accept it. No nations are obliged to accept it.

Mr. BALL. I testified against Gruening's bill. Those who argue for programs of government birth control offer us no alternative between that and total disaster equal to nuclear war.

This is not to obstruct useful means of seeing the world is better fed and that all people have a better place to live in. But I hope our speakers will develop these points:

How will the program solve this problem? We must take into account a great deal of conflicting data with respect to the experimental nature of birth control at the present time, both medically and socially.

BY WHAT MEANS

After we have assayed the missing link of "how," we have to balance whatever benefits we may find against governmental coercion, invasions of personal privacy, and the downgrading of the human dignity of the poor. Because it is the poor for whom these programs are intended.

How will we exert these controls and by what means? Suppose the poor don't come through? They haven't come through very well in India. Where does sterilization stand in these questions? Are we supporting programs for unmarried women and do we plan to deny them public assistance benefits if they have had more than two illegitimate children?

Dr. GUTTMACHER. My feeling is that our government has been unnecessarily timid in regard to birth control, not only for the U.S.A., but for the world.

The first consideration is the happiness of the child and the parents. If we think in this way, unquestionably there would be a diminution in birth rates around the world.

I am the last one to try to implement a program of conception control through coercion. If one offers effective birth control to people in need they will avail themselves of it in extraordinary numbers.

In 1958 we were not allowed to mention the word birth control in the corridors of our city-owned hospitals. There are 14 in all. Today 35,000 women have come and received effective birth control in those hospitals. We are not forcing them to come. We are offering them the opportunity.

Furthermore there are 25 voluntary hospitals in New York giving birth control advice. Five are Catholic hospitals advising on the rhythm technique.

POSITIVE CHOICE

All I'm saying is, let's make pregnancy a positive choice, not have pregnancy a biological accident. If the world is given this opportunity, we shall see a remarkable reduction in birth rate because the desired family size is tremendously smaller in all communities and ethnic groups than the achieved family size.

Mrs. GLASER. What types of birth control methods are used now? What is the extent of their use here and abroad?

Dr. GUTTMACHER. Prior to 1960 the methods were suited to highly motivated intellectual couples but not to those whose lives were relatively unplanned, because all methods previously were contemporaneous with the act of intercourse.

With the introduction of the oral contraceptive, the so-called "pill," and more recently the intra-uterine device, we now have virtually independent methods. These have a tremendous advantage for people who are primarily uneducated and perhaps poorly motivated.

Five million women in the U.S. are using the pill. This is perhaps one-quarter of the couples currently using some method of contraception.

Other medically prescribed methods are used by three million. This includes the IUD, just coming into its own in this country, the rhythm method, diaphragms and intravaginal methods. Another 12 million at the moment use less reliable methods.

QUESTIONS OF SAFETY

There are probably about 4½ million women left in the poverty group in this country who have not yet had offered to them effective, modern methods of contraception.

Mrs. GLASER. Isn't there some question about the safety of the pill?

Dr. GUTTMACHER. If taken precisely as prescribed, it prevents pregnancy in virtually 100% of the cases. But there are side effects of minimal degree. There is still a question mark as to whether the pill actually increases the likelihood of clots and emboli. If it does occur, it's infrequent.

Because I am President of Planned Parenthood, I am responsible for 150,000 women taking the pill and I have to take this very seriously.

Mrs. GLASER. Senator Gruening, under your legislation, would you give as much emphasis to the birth control method approved by the Catholic church as you would to these other methods Dr. Guttmacher has described?

Senator GRUENING. Absolutely. We've made that clear from the start.

Mr. BALL. Senator Gruening's bill unfortunately is not clear to many people. This is not primarily a question for Catholics. We don't escape the difficulties posed by the bill by saying that Catholics have a free choice of methods, because there are not great numbers of Catholics involved under the relief rolls. These bills are aimed at the masses of the poor who are bound to be on public assistance.

CALLS FOR RESEARCH

Birth control as a medical, psychological and sociological matter, is today in a totally experimental stage. Well, let there be experimentation. Let there be research. Let there be the findings of science on women who have used these pills, let us say, for ten years. We don't have that data today. The FDA has not given carte blanche to the pill, nor has it to the IUD.

Mrs. GLASER. Mr. Ball, through the Agency for International Development, some quiet, unpublicized work on birth control and population studies has been under way for three years in four Latin American countries. I was told authoritatively that it is being done in cooperation with the Catholic hierarchy. This would indicate, among other things, that there may be some division of opinion in the church on the subject. What segments of the Catholic community agree with your position? Who does not? Do you see any prospect of possible shifts of views?

Mr. BALL. The point of division, if there is such in the Catholic church, relates to the morality of contraception. It is a problem with which Catholics have to wrestle and on which I suppose the Vatican will eventually make a statement.

Mrs. GLASER. Do you think, Senator Gruening, that merely by making available millions of contraceptives, you can motivate people to use them?

Senator GRUENING. I think it will help. Mr. Ball apparently thinks this is a kind of conspiracy against the poor. He raises the bogey of coercion. It's nothing of the kind.

Mr. BALL. I only raised questions. What does it mean to make information available?

Senator GRUENING. It means to let mothers who have had seven, eight and nine children, but who don't want ten, eleven, twelve and thirteen, come and get the information on how they can stop after they have performed the useful service of motherhood, but whose economy doesn't allow them to have more children, whose health is being wrecked, whose children are not as healthy as they should be. That's all it is. There's nothing mysterious about it.

Dr. GUTTMACHER. I disagree with Mr. Ball that birth control is purely experimental. When you've got five million women on the pill, you're not talking about an experiment.

While Planned Parenthood may not be ideal, none of us has the attitude that the only solution for the poor is birth control. It's important but not the whole story. You're not going to elevate the poor until they get a living wage and job opportunities and education.

VOLUNTARY CONTROL

But at the same time, unless you begin to elevate them by voluntary fertility control, other measures are not going to work. What I object to is attempting to leave out of the brew for the poor the voluntary control of fertility.

Mrs. GLASER. Earlier, Dr. Taeuber mentioned communist activity in this area. Would you tell us what they are doing and whether we can learn from them?

Dr. TAEUBER. The crusading drives in the international area have taken place in neither the United States nor the Soviet Union. Initiative came from Asian countries with very real problems. It was with great timidity supported by the U.S. government.

In Latin America the deep concern comes from university people, schools of public health and medical schools in countries desperately concerned with levels of induced abortion.

Communist countries object to admitting there are population problems. They have a far more permissive and more widespread battery of control services

available. There are no population policies but all means of control are freely available.

Mrs. GLASER. Mr. Ball, what does the Catholic church plan to do about the population explosion?

Mr. BALL. The Catholic church has advanced much thinking on greater utilization of the world's resources and development of our food technology.

The Catholic church isn't responsible for coming up with a world-saving solution just because it has expressed concern about privacy and about the invasion of the rights and dignity of people by governmental birth control.

No one is disputing the propriety, the freedom of people to use contraceptives. There is another and vastly different question presented when we put governmental funding into this picture.

BIOGRAPHIC STATEMENT: RAYMOND EWELL

Senator GRUENING. Now, our last witness this morning is Dr. Raymond Ewell, who is vice president for research at the State University of New York in Buffalo, a position he has held since December 1957.

The subcommittee has asked Dr. Ewell to share his findings concerning the world's food situation and what he believes lies ahead. Can enough food be raised in time? What about food and fertilizer supplies here and in other lands?

Dr. Ewell was born in Brockton, Mass., in 1908. He received his B.S. degree from the University of Toledo in 1928, his M.S. from Purdue University in 1930, his M.A. from the George Washington University in 1935, and his Ph. D. from Princeton University in 1937.

He has been a research chemist in the National Bureau of Standards. During World War II he was technical aid in the National Defense Research Committee, and operations analyst in the U.S. Air Force. For his work in World War II he was awarded the President's Medal for Merit, the highest civilian decoration of the U.S. Government.

After World War II, Dr. Ewell became a chemical economist with the Shell Chemical Co. and in 1948 manager of the Chemical Economics Service at Stanford Research Institute, where he was founder and first editor of the Chemical Economics Handbook. From 1953 to 1956, he was Assistant Director of the National Science Foundation and was loaned to the Government of the Philippines as an adviser on industrial research in 1955–56.

Subsequently, he went to India with the Ford Foundation for 1½ years as an industrial development adviser to the Government of India. In 1960–61 and again in 1963, Dr. Ewell served as an economic consultant to the Government of India on expansion of the fertilizer industry. In 1963 he served as a fertilizer consultant to the United Nations in India, Thailand, and Egypt.

In his extensive travels, Dr. Ewell has visited nearly all the countries of Europe and Asia, including the Soviet Union and most of the Communist countries, and several countries in both Africa and South America.

Dr. Ewell has published over 80 articles and chapters of books in various fields of economics, chemistry, and chemical engineering. He is a member of many scientific, economic, and engineering societies and the Chemists' Club, New York City; Cosmos Club, Washington, D.C.; and the Saturn Club, Buffalo.

He is listed in "Who's Who in America," "Who's Who in American Education," "Who's Who in Engineering," "American Men of Science," and "Chemical Who's Who."

Dr. Ewell, we are very happy to have you here. Please proceed. We are much interested in what you are going to say.

STATEMENT OF DR. RAYMOND EWELL, VICE PRESIDENT FOR RESEARCH, STATE UNIVERSITY OF NEW YORK, BUFFALO, N.Y.

Dr. EWELL. Senator Gruening, members of the subcommittee: I have a five-page printed statement which I think I will not read but I will proceed in an informal way.

Senator GRUENING. Your oral testimony will be printed as well as your written statement, also in full.

Dr. EWELL. Fine. Thank you.

It is a privilege for me to appear before this distinguished subcommittee and present some views on the world population problem.

I will speak principally on what you might call the interrelationships of population growth and agricultural development with some geopolitical implications.

Before getting into the meat of this, I must say that my appearance here has no particular connection with my position as vice president of the State University of New York at Buffalo, N.Y. This is largely a personal activity.

I have been the consultant to a number of foreign governments, to various U.S. Government agencies and international agencies. As my record indicates, I am a chemical engineer by principal training, but I became an economist by professional adoption.

The conclusions and recommendations that I want to talk about today are based on observations extending over the past 25 years in practically all of the countries of Asia and North Africa and some in sub-Saharan Africa and Latin America. I am particularly familiar with India, Pakistan, the Philippines, and Egypt.

India I know at least as well if not better than I know the United States. I have traveled in every nook and corner of India. I have slept in the villages. I have eaten many a meal cooked on a cow dung fire. There is hardly a state or important city in India that I have not visited in a professional capacity and not as a tourist. I have been personally acquainted with all three of the Prime Ministers of India: Prime Minister Nehru, Prime Minister Shastri and now Mrs. Indira Gandhi. I am also personally acquainted with most of the members of the Indian Cabinet today.

Previous witnesses before this subcommittee have pointed out what has now become very clear, that the world's population is growing at a higher rate than agricultural production. This is, of course, related to the sociological fact that it is a slow process to increase agricultural production. Many people think that all you have to do is to produce so many bags of fertilizer and send over so many agricultural extension experts and agricultural production can be increased rapidly; but, as a matter of fact, it is a basic social change that occurs only slowly.

MANY HUNDREDS OF MILLIONS OF PEOPLE WILL FACE FAMINE

Now, if the present trends of population growth and agricultural development continue for the next 5, 10, and 15 years, mass starvation will inevitably result in many countries. The more vulnerable

countries first, say, within 5 years, countries such as India and Pakistan, possibly Communist China. Other countries will follow in just a few years, such as Indonesia, Iran, Turkey, Egypt, Brazil, Colombia, and Peru. There is only a difference of a few years until they get in the same position that India is in today.

There have been many famines in history involving millions of people but none involving hundreds of millions of people. This is what we are facing during the next few years not just 100 million people as the FAO has stated, but many hundreds of millions of people, in fact, possibly even more than a billion, maybe even more than 2 billion.

These famines will begin, of course, where the population/food situation is most vulnerable, but they will become more widespread, and they will be persistent and probably get worse year by year.

So this presents the human race, in my opinion, with the most important and the most nearly insoluble problem that the human race has ever faced.

I will exemplify this with some particular references to India in a few moments.

FOOD/POPULATION PROBLEM WILL BE A FORCE MAJEURE

This mass starvation around the world is, I think, going to develop into what in French is called a *force majeure.* A *force majeure* or a major force, is a force of such tremendous magnitude that it forces a government or an individual as the case may be, to make decisions and take actions that they do not want to take.

I think that the food/population problem in the world is going to become within a few years a *force majeure.*

FOOD/POPULATION PROBLEM . . . WILL GREATLY OVERSHADOW AND DWARF COMMUNISM . . .

During the past decade or two decades there have been two major forces which have shaped American foreign policy; namely, communism and the nuclear arms race. Practically all of our foreign policy has been determined by these two major forces. But the food/population problem is rising as a third major force. I think it will greatly overshadow and dwarf communism and the nuclear arms race as a major force determining our national policies.

The world food problem will completely overshadow in a few years political problems such as Vietnam, Cuba, the Congo, Berlin, and so on, which now occupy so much of our attention. These latter problems, such as Vietnam, will seem less and less important as the years go by and as the enormity of the world food problem becomes more evident.

INDIA IN SEPTEMBER 1966: "NO FOOD LEFT IN THE CUPBOARD . . ."

Now, we are just beginning to get a preview of this situation in what is happening in India. India has long been recognized as the country in the world most vulnerable to famine. Many writers and observers have noted this. I have predicted in a number of articles during the past 5 years that India would experience mass starvation in the late

1960's or early 1970's unless effective measures were taken to speed up agricultural production or slow down the birth rate or both. However, the recent record drought in India, the lowest rainfall in 100 years, has brought India to the brink of famine much sooner than I had forecast. India is now short about 20 percent of her basic food supplies for the coming year or about 20 million tons of grain.

The U.S. food for peace program is trying desperately to ship 10 or 12 million tons of wheat to India during the next 10 months, but it is not at all certain that this is logistically possible. Even if this is accomplished India will still be short several million tons of grain in order to maintain the nutritional level of the past year, which is an appallingly low level by Western standards. There are already food riots in some parts of India, but the real pinch will not come until next September and October when the present crop has been eaten and the new November 1966 crop has not yet been harvested. Therefore we face the possibility that around the first of September, I would guess, the way things are going, India will be down to the point where there is no food left in the cupboard and 500 million people will be wanting something to eat.

Recent newspaper accounts have stated than 10 or 12 million people may die of starvation in India this year, and from my knowledge of India I would say this is quite possible. This, of course, will make a significant change in the rate of population growth in India for this year.

". . . INDIA WILL REALLY GO THROUGH THE MEAT GRINDER THIS YEAR"

I believe that 1966 is a crucial year in the history of India; indeed, it is the most crucial year in the history of modern India. India this year will be under the most severe social and political stress that any nation has even been under in peacetime and, in fact, to use a vernacular expression, India will really go through the meat grinder this year.

However, India will survive this crisis. India has the capacity to endure no matter what happens, but it is problematical what political changes may result in India from the extreme crisis she will go through during the rest of this year.

The current food riots in south India, of course, are just a surface phenomenon; they are not fundamental; they are Communist inspired. They cannot really be having an important food crisis in India right now because the crop has been just harvested. The real crisis will come 6 or 8 months from now.

". . . INDIA'S FOOD SHORTAGE WILL PROBABLY GET PROGRESSIVELY WORSE YEAR BY YEAR"

But India faces an even bigger problem than this immediate food crisis; namely, how to feed her people during the next 5, 10, and 15 years. Unless there is a dramatic improvement in Indian agriculture in the next few years, India's food crisis, India's food shortage, will probably get progressively worse year by year. In other words, while India's food crisis is serious now, it may well become desperate and even disastrous during the coming decade.

The present growth rate will increase India's population by 200 million people during the next 15 years, from 500 million at the present

time to 700 million in 1980. And in my opinion, India cannot possibly feed 200 million more people by 1980.

Just imagine the problem the United States would have if our population were to increase by 200 million people in 15 years, and the United States is infinitely better prepared to take care of 200 million more people than is India. In fact, India may never again be able to feed her population unless and until the birth rate is greatly reduced. The race between agricultural production and the population growth has probably already been lost in India, at least for a generation. The best that can be done by India and other nations willing to help her is to reduce the severity of the oncoming famine during the next decade.

". . . TIME IS WHAT INDIA AND THE OTHER DEVELOPING COUNTRIES DO NOT HAVE"

In this relationship of population and agriculture, time is the crucial factor. India, for instance, could feed 200 million more people by the year 2000 possibly, but certainly not by 1980. The food/population problem in all these countries can be solved given time, but time is what India and the other developing countries do not have. As a result of the rapidly increasing population in most of the countries of Asia, Africa, and Latin America, their social and economic problems are developing and multiplying faster than they can be solved. Many billions of dollars will be poured in trying to solve these problems in the next decade. But they will not be solved until and unless the rate of population growth can be reduced.

In fact, these problems may get worse in spite of the billions of dollars that will be put in trying to solve them. Lower birth rates are needed in most of the world in order to give science and society time to solve these multiplying problems. Neither science nor politics nor money nor religion, powerful forces as they are, can solve these problems unless there is time.

TWO SOLUTIONS

What is the answer? What is the solution? There are obviously two approaches.

One, reduce the population growth rate.

Two, increase agricultural production.

In fact, both of these approaches should be used and will have to be used if population and food supplies are going to be kept in balance during the next 5 to 15 years.

Reducing the population growth rate means reducing the birth rate, and this means the conscious use of birth control. The so-called natural decline of birth rates accompanying rising educational and economic levels has been effective in the United States and Western Europe, but it is not likely to be a significant factor in the developing countries for several decades. But in any event, birth control alone cannot do the job. And improved agriculture alone cannot do the job. Both approaches must be used and used on a massive scale. The problems are massive and therefore programs to solve the problems must be in massive proportions.

"IMPROVING AGRICULTURE . . . IS A MORE COMPLICATED PROBLEM . . . INVOLVES PEOPLE AND EDUCATION AND SOCIAL CHANGE . . ."

The question is sometimes asked of me, "If the United States can send a man to the moon, why cannot we help India, Nigeria, and Brazil, for example, to improve their agriculture?" My answer to this is that improving the agricultures of India, Nigeria, and Brazil is a more complicated problem than sending a man to the moon. The problem of sending a man to the moon can be solved by scientists and engineers, using computers and drawing on the vast store of scientific knowledge. Improving agriculture in the developing countries is a more complicated problem because it involves people and education and social change, and particularly since it involves about 2 billion people.

LEADING QUESTION: PUT MAN ON THE MOON IN THE 1960'S OR AVERT WORLD FAMINE IN THE 1970'S

We are making much better progress on putting a man on the moon than we are on improving the agriculture of the developing countries, and there are at least two reasons for this. One is that, as I said, putting a man on the moon is a simpler problem and, secondly, we are putting far more resources into putting a man on the moon than we are to helping these countries improve their agriculture.

Historians of the future may remark on whether it was more important for the United States and the Soviet Union to have devoted their resources during the 1960's to putting a man on the moon or to have devoted their resources toward averting the world famine of the 1970's.

Possibly if we are rich enough we can do both.

However, agriculture in Asia, Africa, and Latin America can be improved. And the time required to do this can be shortened if the United States and the other advanced countries are willing to put enough money, materials, and manpower into this.

Here are just a few specific suggestions:

EWELL SUGGESTS: ONE, SHIP MORE FOOD

First, to step up shipments of food under the food-for-peace program. This is what is now being done for India. Other food crises will have to be met this way also during the next decade. But the United States cannot expect to make up the food deficits of Asia, Africa, and Latin America indefinitely. We just do not have that much agriculture potential. Other food-surplus countries, such as Canada, Australia, France, Rumania, Argentina, do not have that much food potential either.

TWO, SHIP MORE AGRICULTURAL INPUTS

My second suggestion is to step up the shipment of agricultural inputs to food-deficit countries, such as fertilizers, improved seed, pesticides, and farm equipment. This is cheaper than shipping food. For example, 1 ton of nitrogen or other plant nutrient will produce about 10 additional tons of grain.

THREE, HELP COUNTRIES PRODUCE THEIR OWN AGRICULTURAL INPUTS

My third suggestion is to help the food-deficit countries to produce their own agricultural inputs. This means helping food-deficit countries, such as India, to build their own factories to produce fertilizers, pesticides, and farm equipment, also to help these countries develop improved seed varieties; also to help them with irrigation, drainage, and land clearance projects. In order to build enough fertilizer factories to supply all the fertilizer needs of the developing countries it would take about $5 billion of investment between now and 1980, in other words, spread over a 15-year period. About half of this $5 billion would have to be in dollars or other convertible currency and half could be in local currency for construction of buildings, and so on. The half that would have to be spent in dollars is for the complex machinery and things that are required in a chemical or mechanical production plant. This much investment could produce—in 1980—30 million tons of plant nutrients which would correspond to about 300 million additional tons of grain. Plants to make an adequate supply of pesticides and farm equipment might cost another $2 or $3 billion. These are all very approximate figures, of course.

FOUR, SUPPLY MORE TECHNICAL MANPOWER

The fourth item is to supply more technical manpower from the advanced countries to the developing countries. All of the developing countries are very short of experienced technical manpower in the agricultural field. They need agronomists, plant breeders, plant protection specialists, agricultural economists, rural sociologists, agricultural extension workers, and just plain farmers with a lot of experience and flexible minds. Also, they need engineers to build fertilizer and pesticide factories and to train people to operate them. How many such people are needed? I would say all the countries of these three continents could effectively use 5,000 to 10,000 agricultural specialists compared with only about 1,000 such specialists at the present time in all these countries. In other words, I am guessing that there are only 1,000 people in all the developing countries from the advanced countries helping these countries improve their agriculture, and these are not all U.S. Government people by any means. They are representatives of our Government, many other governments, the Ford Foundation, Rockefeller Foundation, the Friends Service Committee, and literally hundreds of church and private organizations.

The efforts now being put forward by governments and private agencies to improve agriculture in the developing countries are much too small for the size of the problem.

FIVE, STEP UP RESEARCH ON AGRICULTURE

The fifth item is to step up research on agriculture in the food-deficit countries. It has been estimated that of all the money ever spent on agricultural research about 95 percent has been spent on temperate zone agriculture and less than 5 percent on tropical agriculture where most of the people live. Research on agriculture in arid lands would also be of importance.

Time does not permit me to discuss several other topics of interest, which I will mention very briefly.

First, the potential of food from the sea which, in my opinion, is greatly overrated. While additional food from the sea is possible, it is much more costly than producing an equivalent amount of food from land agriculture. At the present time only five- or six-tenths of 1 percent of all the food eaten in the world comes from the sea; even if this is multiplied by four or five it is still very small.

Second, the potential of agriculture in tropical jungle lands, such as Brazil and central Africa. This is also greatly overrated. Tropical jungle lands are not really very productive agricultural lands for a variety of technical reasons.

SYNTHETIC FOODS FROM PETROLEUM

Third, the potential of synthetic food produced from petroleum, which has important long-range possibilities.

Senator GRUENING. Would you be kind enough to elaborate on that? The logical assumption would be that with high temperatures all year round agriculture in tropical lands would be most productive.

JUNGLE SOIL ". . . IS JUST PLAIN CLAY"

Dr. EWELL. The fact is, practically all these tropical jungle lands are subjected to very heavy rainfall, so that the top 4 or 5 feet of soil is almost devoid of plant nutrients.

You do get a vigorous growth of trees which can send down long roots, but once these trees are removed you find that the soil is an extremely barren soil, a laterite type, which is just plain clay, and as soon as the overhead cover is removed, the trees, this laterite soil becomes very hard. It can be developed into an agricultural soil, but it takes an enormous investment of organic material and fertilizer and working with machinery. They have found this repeatedly in central Africa and Brazil where they have tried to convert jungle lands to agriculture.

Senator GRUENING. Thank you.

SYNTHETIC FOOD FROM PETROLEUM . . . HAS VERY IMPORTANT LONG-RANGE POSSIBILITIES

Dr. EWELL. Synthetic food from petroleum has been talked about a good deal and a great deal of research has been done on it, and it has very important long-range possibilities. I believe there is a very good probability that a large industry in this area will develop before the end of the century.

Thank you, Senator Gruening. I am at your disposal, sir.

USE COUNTERPART FUNDS FOR FAMILY PLANNING ABROAD

Senator GRUENING. Dr. Ewell, your testimony is very valuable. It certainly presents a rather gloomy outlook. Do you not believe that if legislation of this type passes, is enacted, and the United States wants to really go to town on contraception abroad we could use a large part of the counterpart funds and have a truly vigorous cam-

paign to introduce the intrauterine loop and really make an intense effort to slow down the birth rate? Do you not think that that would offer some hope? The Indian Government is certainly receptive, is it not?

Dr. EWELL. Very much so. In fact, Dr. Lippes is going over to India within the next month to spend about a month there.

COSTS COULD BE MET BY COUNTERPART FUNDS

The principal cost of an enlarged birth-control program can be met by counterpart funds. The principal dollar costs are not the materials. They are negligible in cost. The main dollar cost is that of sending a small number of Western medical personnel to India or Nigeria or any other country.

POPULATION SPENDING VERSUS ECONOMIC AID

Senator GRUENING. In his statement at the United Nations anniversary on June 26 President Johnson proposed the formula that $5 spent in population control was worth more than $100 spent in economic aid. I do not know whether that is necessarily an exact formula, but the assumption is that he wanted to inculcate upon his agency heads the principle implicit in this equation.

Dr. EWELL. Yes.

"THERE ARE A SCORE OF SPIGOTS . . . FOR FOREIGN AID"

Senator GRUENING. And it would seem to me since we are spending now in the neighborhood of $7 or $8 billion a year in economic aid, as you know—for the so-called bare bones requests which come to over $3 billion, is less than half that we actually spend. For there are a score of spigots by which foreign aid is distributed all over the world. It seems to me that if the administration will see that its agents in the aid program and elsewhere carry out that idea we might get somewhere. There is not much point in continuing to pour money down these various ratholes when it is all being negated and nullified by the population explosion and if the President can get that idea across to his administration we might make some progress.

Dr. EWELL. I think you are entirely right, Senator Gruening.

"AND IF YOU SEND THE MARINES IT COSTS EVEN MORE"

Just look at it quantitatively and say this is how much it costs to make a given impact on the food/population problems with birth control. It costs this much more to improve agriculture, and it costs this much more to ship food over there. [Indicating.]

Senator GRUENING. Right.

Dr. EWELL. And if you send the Marines it costs even more.

WE NEED DETERMINATION AND MONEY

Senator GRUENING. Well, it seems very clear from your testimony that we cannot meet the problem of hunger rapidly enough even by improved methods of agriculture and training, and so forth. And as

you point out, perhaps it is more difficult to do this than to send a man to the moon. But contraceptive techniques could be taught very widely, if there were a determination to do it, and sufficient money—we apparently have the money to do it because we are spending it now, very often in projects that do not produce any permanent benefits.

Dr. EWELL. Personally, I would like to see a significant family planning program operating from counterpart funds in every country in which we have those funds.

Senator GRUENING. Well, the President has gone so far as to indicate in his more recent statements that aid will be somewhat conditioned on the attitude of a recipient country toward this problem of population limitation. While there will be no efforts to force this on anybody as indeed there should not be, I believe there is a high degree of receptivity everywhere when the means are made available.

Dr. EWELL. Yes; practically every country in Asia has now accepted the idea of government sponsorship of birth control programs in principle. I do not think there is any real opposition in any country in Asia today, nor in north Africa. In sub-Saharan Africa they are too busy with other things to think about this, and in Latin America there is a certain amount of opposition, but certainly in Asia the door is wide open for government-sponsored birth control programs—I do not mean our Government—I mean the governments in these countries.

Senator GRUENING. Thank you very much, Dr. Ewell. We are very grateful to you for coming here.

You have made an important contribution to these hearings, a contribution which is only one of your many to a better understanding of the really desperate situation that will confront us all if we do not respond promptly and directly to the problem which you have so ably described.

I now direct that your prepared statement be placed in the printed record of this hearing.

To follow this, I direct that your article "Famine and Fertilizer" be also included in the printed hearing record. Your article not only emphasizes what you have said here today, but it also discusses in more detail just what is happening in the developing regions of the world.

Dr. EWELL. Thank you, sir.

(The prepared statement of Dr. Raymond Ewell and above-mentioned article follow:)

PREPARED STATEMENT OF RAYMOND EWELL, PH. D.

Senator Gruening, Members of the Subcommittee: It is a privilege for me to appear before this distinguished subcommittee today and present some views on the world food/population problem. My conclusions and recommendations regarding this problem are based on observations in most of the countries of Asia and North Africa and some in Latin America, extending over the past 25 years. I am particularly familiar with India, Pakistan, the Philippines and Egypt.

If I may come immediately to the most crucial point—the world is running short of food. This situation is developing gradually at present, but it can't continue for very many years without resulting in severe social and political dislocations in a number of countries. Previous witnesses before this subcommittee have pointed out that the world's population is growing at a higher rate than the world's agricultural production. Moreover, most of the increases in agricultural production during the past decade have been concentrated in the United

States, Canada, Europe, Australia, and a few other countries, while most of the countries of Asia, Africa and Latin America have been falling farther and farther behind in their ability to feed themselves.

The world food problem is of such massive proportions and of such complexity that it is difficult to grasp it until one has observed it and studied it over a period of years. Moreover, it is almost impossible to understand this problem unless one has spent at least some time in Asia, where poverty and undernutrition reach their greatest depths.

Without going into detailed statistics, the general picture is that since 1960 food production in Asia, Africa and Latin America has been growing at rates of 1% to 2% per year while populations have been growing at rates of 2% to 4% per year, leaving a gap of over 1% per year. The disparity varies a great deal among the 90 countries of Asia, Africa and Latin America. The disparity between food production and population growth has been particularly acute in Latin America where food production per capita on the average has declined nearly 10% since 1960. The disparity is less for Asia and Africa, but it is a serious problem in all three continents.

If these trends continue for the next 10 to 15 years, mass starvation will inevitably result, and this would be famine on a scale never before experienced in the world's history. There have been many famines in history involving millions of people, but none involving hundreds of millions of people. Not only will such famines be widespread, but they will be persistent and probably get worse year by year. It is hard for us sitting in rich, comfortable, overfed America to realize that the greatest disaster in the history of the world is just around the corner.

Let us look at India as an example. India has long been recognized as the country in the world most vulnerable to famine. I have predicted in several articles during the past five years that India would experience mass starvation in the late 1960's or early 1970's, unless effective measures were taken to speed up agricultural production or to slow down the birth rate, or both. The recent 100-year record drought has caused India to come to the brink of famine even sooner than I had forecast. India is now short about 20 per cent of her basic food supplies for the coming year, or about 20 million tons of grain. The United States Food for Peace program is trying desperately to ship 10 or 12 million tons of wheat to India during the next 10 months, but it is not at all certain whether this is logistically possible. Even if this is accomplished, India would still be short several million tons of grain in order to maintain the nutritional level of the past year, which is an appalling low level by Western standards. There are already food riots in some parts of India, but the real pinch will not come until next September and October when the present crop has been eaten and the new November crop has not yet been harvested. Recent newspaper accounts have stated that 10 or 12 million people may die of starvation in India during 1966, and I would agree that this is quite possible.

However, India will survive this crisis. India has the capacity to endure no matter what happens, but it is problematical what political changes may result in India from the extreme crisis she will go through during 1966. But India faces an even bigger problem than the immediate food crisis, namely, how to feed her people during the next 5, 10 and 15 years. Unless there is a dramatic improvement in India's agriculture in the next few years, India's food shortage will probably get progressively worse, year by year. While India's food crisis is serious now, it may well go from serious to desperate to disastrous during the coming decade, or even sooner.

India's population will probably increase by 200 million people during the next 15 years—from 500 million in 1965 to 700 million in 1980—and India cannot possibly feed 200 million more people by 1980. Just imagine the problems the United States would have if our population increased by 200 million in 15 years, and the United States is infinitely better prepared to take care of 200 million more people than is India. In fact, India may never again be able to feed her population unless and until the birth rate is greatly reduced. The race between agricultural production and population growth has probably already been lost in India—at least for a generation. The best that can be done by India and other nations willing to help her is to reduce the severity of the oncoming famine during the next decade.

I have been using India as an example but many other countries in Asia, Africa and Latin America are facing food crises the same as India's—Pakistan, Indonesia, Iran, Turkey, Egypt, Brazil, Peru and Colombia to mention only a few. And most of the other countries of Asia, Africa and Latin America will be facing famine by 1980. A few countries such as Burma, Thailand, the Philippines,

Nigeria, Ghana, Chile and others seem to be in relatively good shape food-wise at present, but they all have such high population growth rates that they will be in serious difficulties in a few more years.

Time is the crucial factor. The food/population problem can be solved given time. But time is what India and the other developing countries do not have. As a result of the rapidly increasing populations in Asia, Africa and Latin America, their social and economic problems are developing and multiplying faster than they can be solved. Many billions of dollars will be poured into trying to solve these problems in the next decade, but they will not be solved unless the rate of population growth can be reduced. In fact, the problems may get worse in spite of the billions of dollars put into trying to solve them. Lower birth rates are needed in most of the world in order to give science and society time to solve these multiplying problems. Neither science nor politics nor money nor religion, powerful forces as they are, can solve these problems unless there is time.

What is the answer? What is the solution? There are obviously two approaches:

1. Reduce the population growth rate.
2. Increase agricultural production.

In fact, both these approaches should be used and will have to be used if population and food supplies are going to be kept in balance during the next 5 to 15 years.

Reducing the population growth rate means reducing the birth rate and this means the conscious use of birth control. The so-called "natural" decline of birth rates accompanying rising educational and economic levels is not likely to be a significant factor in the developing countries for several decades. But birth control alone can't do the job. An improved agriculture alone can't do the job. Both approaches must be used—and used on a massive scale. The problems are massive and therefore programs to solve the problems must be in massive proportions.

If the improvement of agriculture could be speeded up considerably above the present rate of improvement, it is conceivable that agriculture could keep up with the present population growth rate for 15 years, maybe even 25 years. But even 15 years is being extremely optimistic. And beyond 15 to 25 years it is totally impossible. In other words, in my opinion, it is impossible for agriculture to be improved that fast. Again, time is the crucial factor.

What can we expect from birth control? Birth control programs are making good progress in a few small countries, notably Taiwan and South Korea. Programs are getting under way slowly in India, Pakistan, Turkey, Egypt and Tunisia. Communist China is reported to be making some progress. Almost nothing is being done in Indonesia, Iran, sub-Saharan Africa and most Latin American countries. Progress is not being made on the massive scale needed. My opinion is that birth control might conceivably reduce the overall population growth rates of Asia, Africa and Latin America by 20–25% by 1975 and possibly 30–40% by 1980. This would be a tremendous accomplishment, but it would still require a faster rate of agricultural improvement than at present in order to keep food and population in reasonable balance.

There are, therefore, two separable problems: a short-term problem and a longer term problem. In the short term of 1966–1980, the primary approach to feeding the world's population must be improvement of agriculture. In the longer term beyond 1980, birth control is the only answer. The most optimistic appraisal of future trends in agriculture indicate to me that agriculture cannot keep up with present population growth rates much beyond 1980. However, even though birth control is not likely to have any major effect until the 1980's, it should nevertheless be pushed with all possible vigor right now in order to reduce the severity of the food crisis in the 1980's and hopefully may have some effect even in the 1970's.

Fortunately, there is great potential for increasing agricultural production in most of the countries of Asia, Africa and Latin America. Agricultural yields are very low in these countries; in many cases yields per acre are $\frac{2}{10}$ to $\frac{5}{10}$ the yields of North America, Europe or Japan. However, increasing agricultural yields on a broad front is a very slow and difficult process. Basically, this is so because of the low educational levels of farmers in Asia, Africa and Latin America, but shortages of capital and technical manpower are also important. The vast bulk of the farmers in Asia, Africa and Latin America are illiterate, they cannot read and write, they cannot do simple arithmetic, they do not understand the elements of plant biology. Under these circumstances the

introduction of scientific agriculture is a slow process. Also, there are vast organizational problems involved in disseminating the knowledge, materials and equipment needed to make the change from traditional agriculture to scientific agriculture.

The question is sometimes asked: If the United States can send a man to the moon why can't we help India, Nigeria and Brazil to improve their agricultures? The answer is that improving the agricultures of India, Nigeria and Brazil is a more complicated problem than sending a man to the moon. The problem of sending a man to the moon can be solved by scientists and engineers using computers and the vast store of scientific knowledge now available. Improving agriculture in the developing countries is more complicated because it involves people and education and social change—particularly since it involves 2 billion people.

Historians of the future may remark on whether it was more important for the United States and the Soviet Union to have devoted their resources during the 1960's to putting a man on the moon or to have devoted their resources toward averting the world famine of the 1970's. Perhaps we can do both.

However, agriculture in Asia, Africa and Latin America can be improved. And the time required to do this can be shortened if the United States and other advanced countries are willing to put enough money, materials and manpower into it.

Here are some specific suggestions for action programs:

1. *Step up shipments of food under the Food for Peace Program.*—The immediate crisis in India will have to be met this way. Probably other food crises will have to be met this way during the next decade. But the United States can't expect to make up the food deficits of Asia, Africa and Latin America indefinitely. Other food-surplus countries don't have enough food to do this either.

2. *Ship agricultural inputs to food-deficit countries.*—This includes fertilizers, improved seeds, pesticides, and farm equipment. This is probably cheaper than shipping food. For example, one ton of nitrogen or other plant nutrient will produce about 10 additional tons of grain.

3. *Help food-deficit countries to produce agricultural inputs.*—This means helping food-deficit countries to build factories to produce fertilizers, pesticides and farm equipment. It also means helping these countries to produce improved seed varieties themselves. It also means helping them with irrigation, drainage and land clearance projects. In order to build enough fertilizer factories in Asia, Africa and Latin America to supply the fertilizer they will need would take about $5 billion investment between now and 1980, of which half would have to be dollars, half could be local currency. This much investment would produce 30 million tons of plant nutrients in 1980 which would correspond to about 300 million additional tons of grain. These figures are all very approximate, of course. Plants to make an adequate supply of pesticides and farm equipment might cost another $2 to $3 billion.

4. *Supply technical manpower.*—All these efforts towards agricultural improvement would take a lot of technical manpower besides money and materials. All of the developing countries are short of experienced technical manpower in the agricultural field. They need agronomists, plant breeders, plant protection specialists, agricultural economists, rural sociologists, and just plain farmers with a lot of experience and flexible minds. Also, they need chemical engineers to help build fertilizer and pesticide factories and to train people to operate them. How many are needed? I would say all the countries of Asia, Africa and Latin America could use effectively 5,000–10,000 agricultural specialists, including engineers for industries related to agriculture. This compares with less than 1,000 such specialists at present in all the developing countries from all the advanced countries. The efforts now being put forward by governments and private agencies to improve agriculture in the developing countries are much too small for the size of the problem.

5. *Step up research on agriculture in the food-deficit countries.*—This means more research on agriculture in the tropics. It has been estimated that of all the money ever spent on agricultural research, 95% was spent on temperate zone agriculture and less than 5% on tropical agriculture. Research on agriculture in arid lands would also be important.

Other witnesses before this subcommittee have already presented action programs and research programs on birth control, so I will not touch on that.

Also, time does not permit me to discuss (1) the potential of food from the sea, which is possible but more expensive than land agriculture, (2) the poten-

tial of agriculture in tropical jungle land, which is greatly over-rated, (3) the potential of synthetic food from petroleum which is an important long-range possibility and will probably develop into a large industry before the end of the century.

Senator Gruening and members of the subcommittee, thank you for your kind attention.

EXHIBIT 43

FAMINE AND FERTILIZER

(By Dr. Raymond Ewell, Chemical and Engineering News, December 14, 1964) [1]

UNLESS THE WESTERN WORLD ACTS FAST, ASIA, AFRICA, AND LATIN AMERICA FACE FAMINE IN THE 1970'S

The world is on the threshold of the biggest famine in history. Not the world we live in, but the underdeveloped world, the three poor continents of Asia, Africa, and Latin America.

The populations of these continents are growing rapidly, and the production of food in these continents is lagging the population growth. This is the problem in a nutshell. This is the greatest and most nearly insoluble problem in the history of the world. And it is almost here.

If present trends continue, it seems likely that famine will reach serious proportions in India, Pakistan, and Communist China in the early 1970's. Indonesia, Iran, Turkey, Egypt, Brazil, and several other countries will follow within a few years. Most of the other countries of Asia, Africa, and Latin America will fall in this category by 1980. Such a famine will be of massive proportions affecting hundreds of millions, possibly even billions, of persons. If this happens, as appears probable, it will be the most colossal catastrophe in history. It would be a completely new situation in the world's history—not enough food for the billions of human beings inhabiting the surface of this globe. This would be the Malthusian Doctrine finally coming true after 170 years.

The food/population problem will be the overriding problem of the last quarter of this century. The political and economic consequences of widespread famine in Asia, Africa, and Latin America are certain to be massive and far-reaching. It seems unlikely that stable governments can be maintained in countries where a large part of the population is starving.

The food/population problem seems likely to reach such enormous proportions by 1975 that it will dwarf and overshadow most of the problems and anxieties which now occupy our attention, such as the threat of nuclear war, Communism, the space race, racial problems, unemployment, Berlin, Vietnam, the Congo, Cyprus, Cuba, and the like. These current problems will fade into the background as the enormity of the world food problem impresses itself on the western world.

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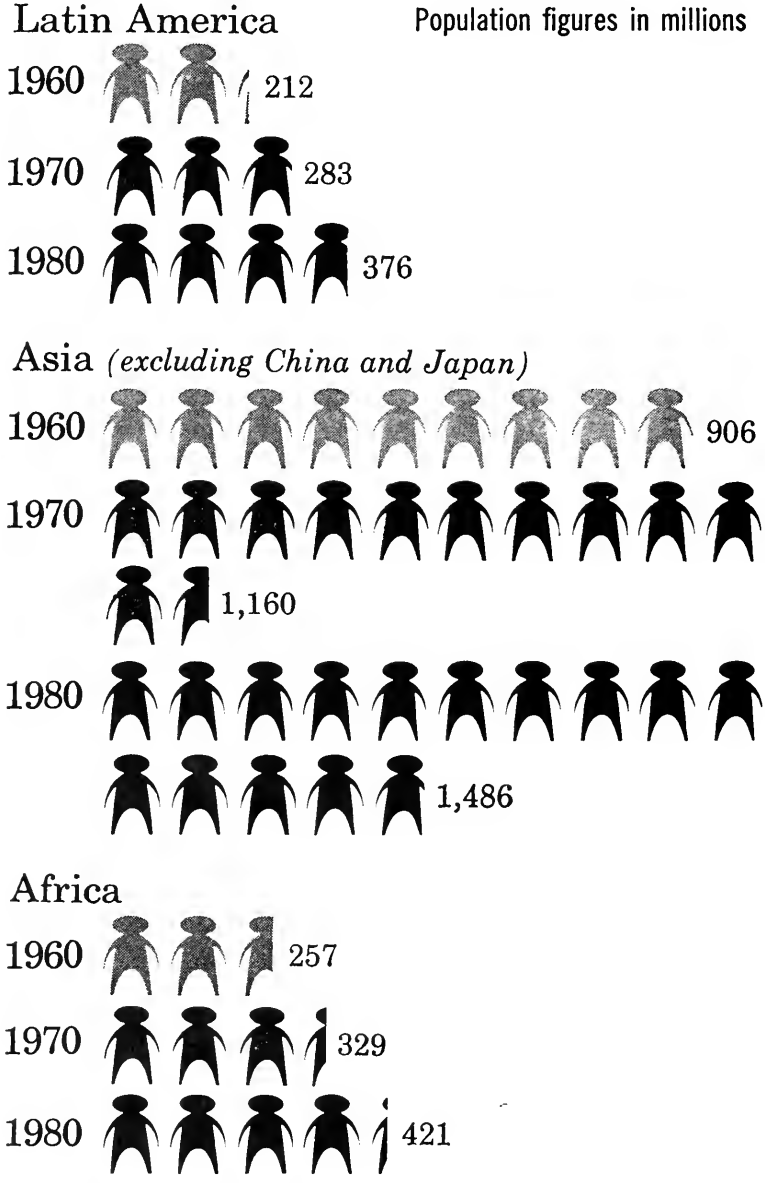
[1] This article is based on a talk that Dr. Ewell gave at a luncheon meeting of the Division of Fertilizer and Soil Chemistry held during the 148th National Meeting of the American Chemical Society in Chicago, Ill.

In 20 years the populations of Latin America, Asia, and Africa may increase by 75%



Note. Data are based on an assumed rate of increase of 2.5% per year for Asia and Africa and 2.9% per year for Latin America for 1960-80.

Source: United Nations Demographic Yearbook, 1963

Population Explosion

Now that we have looked at the over-all picture, let's look at some relevant facts. The populations of Asia, Africa, and Latin America are now growing at rates of 2.5%, 2.5%, and 2.9% per year, respectively. These are their highest growth rates in history, and the rates of growth are still increasing. These high population growth rates are frequently referred to as the population explosion—and it really is an explosion. For example, a rate of 2.5% per year will double the population in 28 years.

The basic cause of the population explosion is the rapid drop in the death rate in Asia, Africa, and Latin America since 1945 as a result of the introduction into these areas of penicillin, DDT, and other modern medical and public health practices. Birth rates have remained practically constant, but death rates have dropped sharply since 1945.

Therefore, the population explosion is a new phenomenon—it has been a real explosion only since the end of World War II. Population growth rates were much lower before World War II—for example, 1.2% in both Asia and Africa in 1930–40, and 1.9% in Latin America during the same period. Before 1930 they were even lower. In fact, population growth rates above 1% per year were rare anywhere in the world before the 20th century.

Demographers have projected a growth in population of Asia (excluding China and Japan), Africa, and Latin America rising from 1.4 billion in 1960 to 2.3 billion in 1980. This is a minimum increase, in my opinon, because the population growth rates are still increasing. Should such an increase occur, the population in these three continents would increase by some 900 million people in only 20 years. This is a stupendous figure—900 million is a lot of people and 20 years is not much time in which to solve the many problems 900 million more people will bring with them. If China is included in this forecast, the population growth from 1960 to 1980 would be 1.3 billion. In the rest of this article China is excluded from the discussion because (1) it is on the other side of the ideological fence, and (2) we have little demographic or economic information on China. Japan is excluded from the discussion, also, because economically Japan is about the same as a European country.

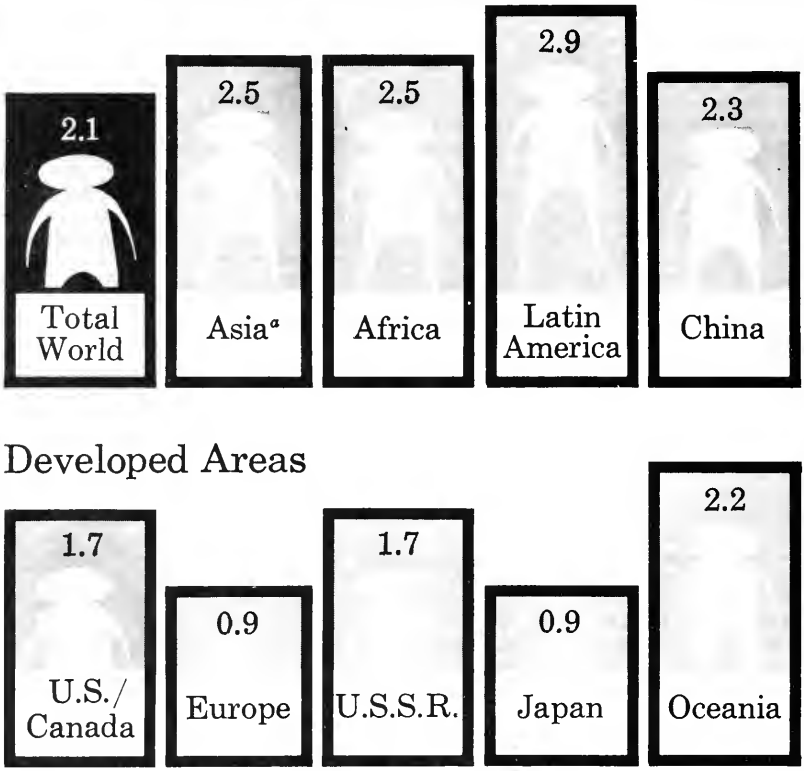
The contrast in birth rates, death rates, and apparent population growth rates in major areas of the world between the developed and underdeveloped areas is striking. Particularly significant is that the underdeveloped areas with birth rates of 41 to 46 per 1000 still have death rates as high as 12 to 23 per 1000. This indicates the probability of further declines in the death rates with consequent increases in population growth rates, particularly in Asia and Africa. The birth rate is an irresistible force which is unlikely to change appreciably for 15 years or more.

The production of food in Asia, Africa, and Latin America has remained approximately constant for the past three or four years, and there is no social or economic development on the horizon that seems likely to increase food production in these continents enough to feed 900 million more people by 1980. In Asia the annual production of grain has remained constant at about 150 million tons since 1960 so that the per capita production of grain has declined from 16 ounces per day to 15 ounces per day during the past three years. In Latin America the annual production of grain has remained constant at about 42 million tons since 1958 so that the per capita production of grain has declined from 21 ounces per day to 18 ounces per day. Africa has had a small increase in grain production so that per capita production has remained at 15 ounces per day for the past seven years.

Grain is, of course, not the only food, but it is the big staple and supplies a large portion of the food in these three continents—70% in Asia, 45% in Africa, 40% in Latin America. Potatoes, yams, and cassava supply an additional large percentage in Latin America.

Projected growth rates through 1980 for underdeveloped areas are almost double those for developed areas

Growth rate in per cent



[a] *Excluding China and Japan*

Note. Growth rates are estimated from an analysis of 1920-62 growth rates.

Source: United Nations Demographic Yearbook, 1963

Greatest Famine of All Time

If these trends continue for a few more years, famine will inevitably result. And this would be famine on a scale never before experienced in the world's history. There have been many famines in history involving millions of people, but none involving hundreds of millions of people. Moreover, in past famines many people have died of disease as well as of starvation. Now modern medicine keeps people alive even though starving, and they still compete for a share of the inadequate food supply.

Not only will the forthcoming famine be widespread, affecting hundreds of millions of people, but it will be persistent and will probably get worse year by year, unless ways and means are soon found to increase agricultural production. It is hard for us sitting in rich, comfortable, overfed America to realize that the

greatest disaster in the history of the world is just around the corner. The efforts now being put forward by governments and private agencies to try to avert this disaster are much too small to cope with a problem of this magnitude.

The countries of Asia, Africa, and Latin America vary considerably in their vulnerability to famine. India and Pakistan are undoubtedly the most vulnerable. These two countries will feel the brunt of the world famine first. China may be equally vulnerable, but we have little reliable data on the food situation there. Next in vulnerability come Indonesia, Iran, Turkey, Egypt, Brazil, and a few other countries. These countries have high population growth rates of 2.0 to 3.5% per year and population growth is already outrunning food production. Some Asian countries such as the Philippines, Burma, Thailand, Malaya, and Taiwan seem to be relatively secure against famine now, but they all have very high population growth rates which will soon soak up their present surpluses. Therefore these countries, too, will have food shortages within 10 to 15 years unless they can reduce their population growth rates. The same applies to most of the countries of Africa and Latin America.

Birth Control or Famine

What is the answer? What is the solution? There are three obvious possible answers: Reduce the population growth rate or increase agricultural production, or both. Reducing the population growth rate means reducing the birth rate since it is not socially acceptable to deliberately increase the death rate. In fact, birth control is the only answer in the long run.[2] Improved agriculture could conceivably take care of the expected increases in population for 20 or maybe 30 years, but beyond that it would be impossible. Birth control is being actively promoted by governments and by private groups in most countries in the world today, but it is moving slowly in Asia, Africa, and Latin America and seems unlikely to cause any marked decrease in the birth rate before the 1980's. But ultimately, birth control is the only answer.

Widespread use of birth control is a basic social and cultural change which is certain to occur slowly in these countries. Birth control moved ahead very rapidly in Japan in 1948–55, but Japan has an educated, disciplined populace, whereas most of the undeveloped countries do not. Oral contraceptive pills are probably not the answer in the underdeveloped countries for reasons of both cost and illiteracy. The most promising contraceptive method for these countries is the plastic intrauterine devices such as the Lippes loop and the Margulies coil. These devices are now being used in more than 25 countries of Asia, Africa, and Latin America, as well as in the U.S., Europe, and Japan. However, mass application in Asia, Africa, and Latin America is likely to be slow.

Increasing agricultural production is, therefore, the only real possibility of averting world famine in the 1970's and 1980's. It is technically possible to double or even triple agricultural production in all of Asia, Africa, and Latin America through the use of more fertilizers, more irrigation, better seed varieties, more pesticides, and other improved agricultural practices. For example, the rice yield in Italy is 3200 pounds per acre, in Japan 2720 pounds per acre, in the U.S. 2210 pounds per acre, in China 1600 pounds per acre, but in India only 900 pounds per acre. For another example, the wheat yield in Denmark is 3700 pounds per acre, in Japan 2450 pounds per acre, in the U.S. 1440 pounds per acre, but in India only 760 pounds per acre. Other basic food crops, such as corn, potatoes, beans, peanuts, cassava, bananas, and sugarcane show similar pictures. Many countries such as Pakistan, South Africa, Brazil, Ethiopia, and the Philippines have crop yields as low as or even lower than India. This comparison of crop yields gives an indication of the potential for increasing crop yields in the low productivity countries.

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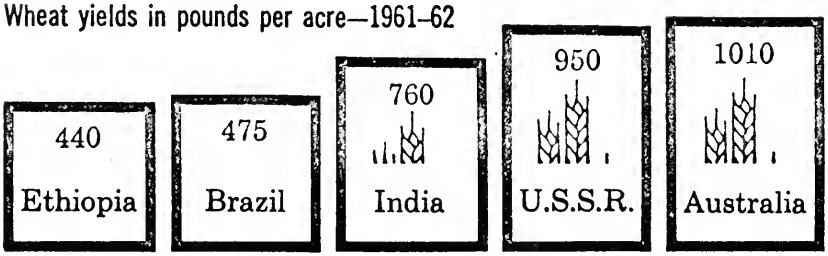
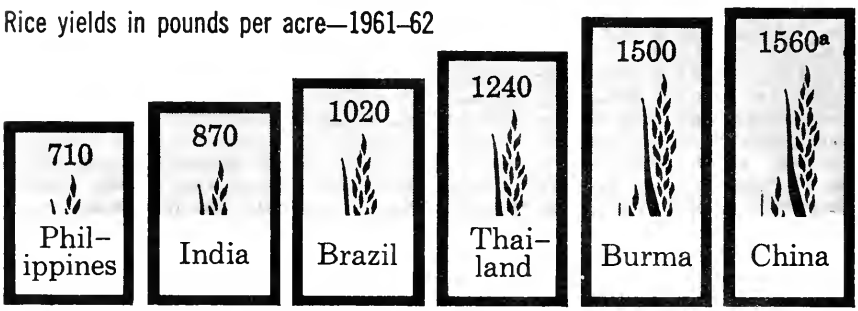
Technological advancements make possible the doubling or tripling of grain production . . .

Wheat yields in pounds per acre—1961–62

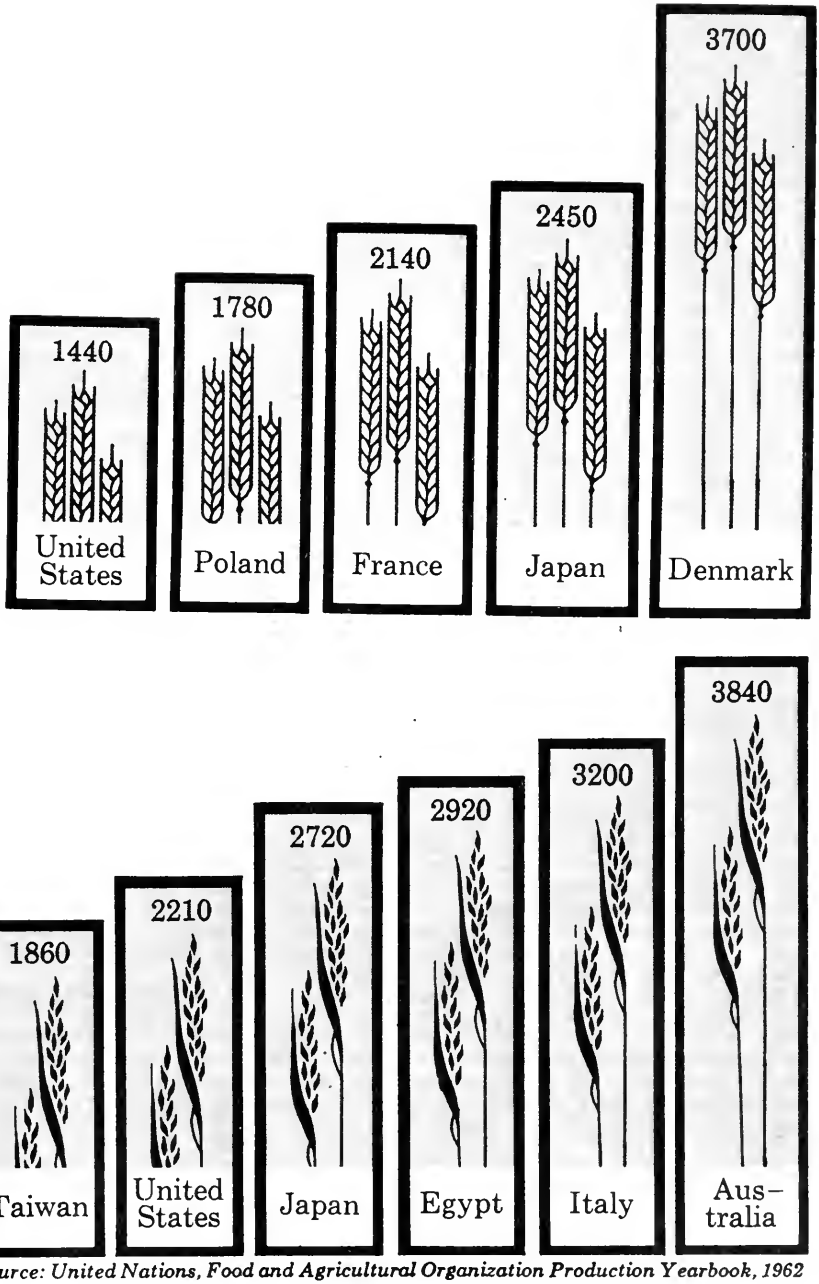


. . . in underdeveloped areas, where grain is a major item in the food budget

Rice yields in pounds per acre—1961–62



[a]*Figures are for 1960-61. Note. Rice is milled rice which equals paddy rice times 0.65.*



Source: United Nations, Food and Agricultural Organization Production Yearbook, 1962

Social Change vs. Farm Technology

There is no doubt that agricultural productivity could be raised greatly in any country in the world—if there were time. But time is the crux of the problem. The use of improved agricultural methods represents a basic social and cultural change, and social change is a slow process. Most of the farmers of Asia, Africa, and Latin America are totally illiterate—they can't read or write or add numbers nor do they understand the elements of plant biology. Under these conditions, the introduction of scientific agriculture into Asia, Africa, and Latin America is likely to be a slow process. In fact, the social, cultural, and educational factors, not the technical factors, are the real bottlenecks in improving agriculture in these countries.

If the population would remain constant for 30 or 40 years, agriculture could change gradually and begin to supply a more adequate diet. Instead the population of these three continents will probably double in the next 25 to 30 years. Where will the food come from to feed 2 billion more people in Asia, Africa, and Latin America by 1990?

Of the various technical factors, increased use of fertilizer offers the best possibility for a quick increase in agricultural production. Field trials in many countries have established that moderate applications of fertilizer will give large increases in yields even if other technical inputs such as seed varieties and water supply are left unchanged. For example, the FAO Freedom From Hunger Campaign has recently completed a series of 9500 fertilizer demonstrations and field trials in 14 countries (Turkey, Syria, Lebanon, Morocco, Nigeria, Ghana, Senegal, Togo, Colombia, Ecuador, Guatemala, Honduras, Costa Rica, and El Salvador). The trials included many crops such as wheat, barley, rice, corn, beans, cotton, potatoes, yams, sugar beets, peanuts, and vegetables. These trials established beyond doubt that substantial increases in yield can be obtained by the use of moderate dosages of fertilizers even if no other technical factors are changed.

Similar trials have been conducted in India, Pakistan, Taiwan, the Philippines, Mexico, and other countries.

The dosages in these tests ranged from 45 to 135 kilograms of plant nutrient per hectare (40 to 120 pounds per acre) and the increases in yield of grains and beans vary from 30 to 120%. Of particular interest is the fact that the value/cost ratios varied from 2.3 to 7.0, corresponding to economic returns of 130 to 600% on the investment in fertilizer. Similar results were obtained for other crops. In fact, the highest economic returns were obtained from potatoes with value/cost ratios of 10 to 13.

The report of the seventh Meeting of the FAO Fertilizer Industry Advisory Panel, July 7, 1964, summarizes its findings as follows:

"We now have results from over 9500 demonstrations and trials in 14 countries in three regions. . . . There can be no manner of doubt that when farmers in developing countries use fertilizers—even without other improved farming methods—the results will be good. . . . The average response to the best [most economic] treatments, for all countries, crops, and seasons was 74% [increase in yield]. . . . The regional averages were Near East and North Africa, 54%; West Africa, 72%; Northern Latin America, 95%."

Northern Latin America gave the highest average response because the trials there included a number of vegetables which gave very high responses.

The increases in yield were obtained using locally available seed varieties. Much greater increases in yield could have been obtained if improved seed varieties had been used with increased quantities of fertilizer. To obtain the high yields of Europe, the U.S., and Japan, it will be necessary to develop improved seed varieties, but this takes years of painstaking research. Ultimately, improved seed varieties will have to be used widely in Asia, Africa, and Latin America to meet the food needs, but this will also be a slow process, and it seems unlikely to have a massive effect in the 15 years between now and 1980.

One very promising development has been the establishment of the International Rice Research Institute in the Philippines by the Ford and Rockefeller Foundations in 1962. Also, the work of the Rockfeller Foundation in developing improved varieties of wheat and corn in India and Latin America is of the highest importance.

However, fertilizer seems to offer the best possibility of a substantial increase in agricultural production between now and 1980. The other technical inputs in agriculture probably cannot be brought into action on a sufficiently massive basis fast enough to play a major role. Improved seeds, increased irrigation, pesticides, and all other technical inputs must be utilized to the fullest extent

possible, yet it should be recognized that the principal means of raising agricultural productivity in Asia, Africa, and Latin America in the critical next 15 years will have to be fertilizer.

With no other changes in farming methods, proper fertilizer use brings increased crop yields

Country	Crop	Dosage, kilograms per hectare (N–P_2O_5–K_2O)	Percent increase in crop yield	Value-cost ratio [1]
Turkey	Wheat	40-60-0	73	2.5
	Corn	40-40-40	85	2.8
Morocco	Wheat	30-60-40	75	3.0
	Barley	30-60-40	91	2.5
	Beans	20-60-40	78	2.3
Lebanon	Wheat	20-25-7.5	101	7.0
Nigeria	Rice	22.4-22.4-0	30	4.0
Senegal	do	45-0-0	73	3.3
Ghana	Corn	44.8-0-0	120	3.3
	Rice	22.4-22.4-0	52	3.3
Ecuador	Corn	0-45-45	94	6.3
	Beans	0-45-0	93	2.2
Honduras	Corn	45-45-45	120	4.8
Costa Rica	Rice	45-45-45	80	4.5
	Corn	45-45-45	70	4.0
El Salvador	Beans	45-0-0	50	4.0

[1] Value of additional crop obtained per cost of fertilizer.

Source: Review of trial and demonstration results, 1961–62, FFHC fertilizer program, FAO, United Nations, January 1964.

Minimum Goals

How much fertilizer will it take? What facilities will be needed? How much will it cost? How will the fertilizer be distributed and applied to the soil?

As a minimum goal, let us assume that agricultural production should be increased enough to provide 16 ounces of grain per person per day in Asia, Africa, and Latin America in 1970 and also in 1980. This is the present level of consumption, so the minimum goal suggested is simply maintaining the present nutritional level, inadequate as it is. Everyone with any humanitarian instincts would like to see the diet of the underdeveloped areas improved, but this is virtually impossible until the birth rate is reduced substantially. The underdeveloped countries will be pushed to the limit to maintain the present diet even with maximum help from the developed countries. The people of Asia, Africa, and Latin America ask only for enough rice, wheat, corn, and beans. Foods like meat, fish, eggs, and milk are beyond the reach of most of the people of these lands now and are likely to be even less available in the future as the populations continue to increase.

To provide 16 ounces of grain per day for the 400 million additional population of these continents in 1970 would require 15 million tons of plant nutrients, compared with consumption of 3 million tons in 1960–61. Consumption is probably about 4 million tons in 1963–64. To feed the 900 million additional population in 1980, 30 million tons of plant nutrients would be required. These figures were calculated on the basis that one ton of plant nutrient results in 8 tons of additional grain and that two thirds of the fertilizer would be used on grain, one third on all other crops. The over-all tonnages of 15 million tons in 1970 and 30 million tons in 1980 compare with total world consumption of 30 million tons in 1962–63. Also for comparison, the current big Soviet fertilizer push has a target of 16 to 20 million tons of plant nutrients in 1970 (80 million tons gross weight of fertilizer).

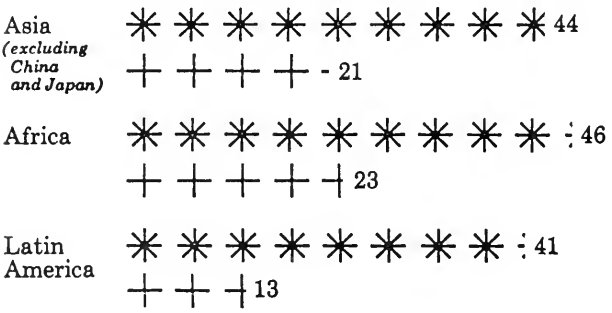
Rate of population growth in underdeveloped areas exceeds rate in developed areas . . .

. . . and the difference, at least for the next 20 years, should grow even more striking

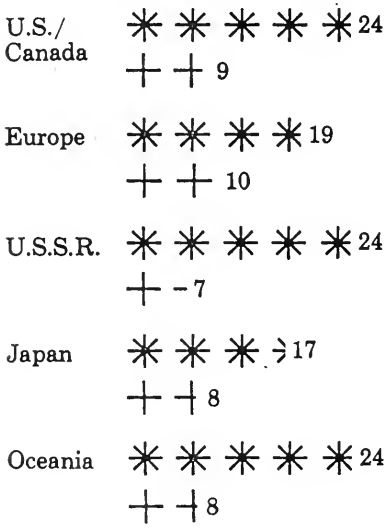
✳ = *5 births per 1000 population (1958–62)*

\+ = *5 deaths per 1000 population (1958–62)*

Underdeveloped Areas



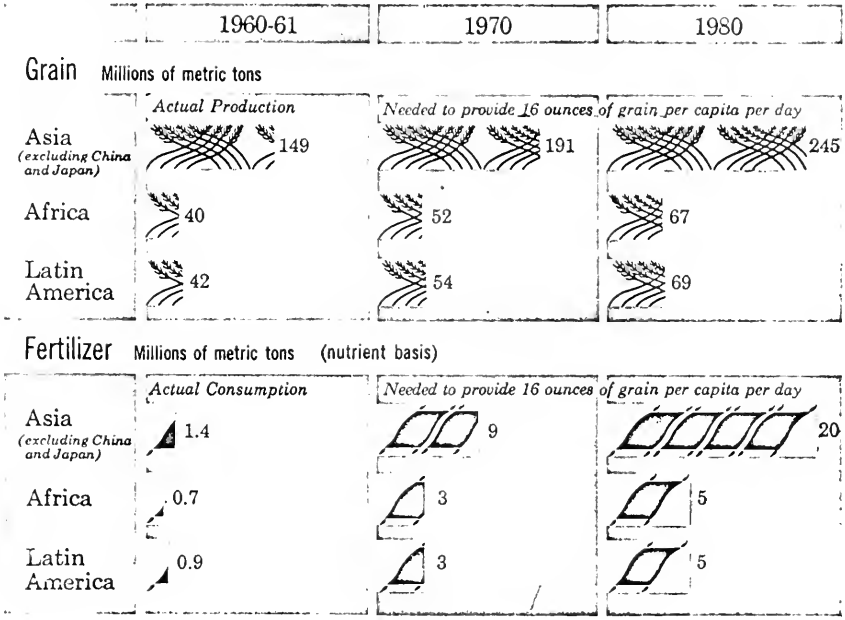
Developed Areas



Population changes due to net migration must be added to (or subtracted from) the apparent natural growth rate. These changes are very small except in the U.S., Canada, and Oceania.

Source: United Nations Demographic Yearbook, 1963

To provide Asians, Africans, and Latin Americans with a minimum diet through 1980, grain production there will have to double, fertilizer use increase about 10 times



To emphasize this point further, I am willing to put myself on record that if Asia, Africa, and Latin America are not using quantities of fertilizer approaching 30 million tons by 1980, they are almost certain to be engulfed in widespread famine.

The consequences of the population explosion have been discussed and analyzed in theoretical terms for a decade now, but the time for theory is nearing an end and the time for action is here. There has been too much talk and theorizing about how to solve the world food crisis in the year 2000 when the beginnings of the crisis are probably only five or six years away.

Of the requirements we have been discussing, it is important to keep in mind the dominant place of India. India, with a 1961 population of 440 million, is about one third of the underdeveloped world. The rest of Asia—Pakistan, Indonesia, the Philippines, Turkey, Thailand, Burma—with a 1961 population of about 475 million is another one third. Africa and Latin America each constitutes one sixth of the underdeveloped world.

The immediate problem is how can the countries of Asia, Africa, and Latin America obtain a supply of 15 million tons of plant nutrients by 1970 and 30 million tons by 1980. Domestic production of fertilizer in all three continents together is about 1.5 million tons in 1963–64 and a good estimate for 1970 production would be 3 to 4 million tons. Production in 1970 might be increased to 5 to 6 million tons by a new crash program of fertilizer plant construction, but generally speaking it is already too late to increase production greatly by 1970. I believe, therefore, that most of the fertilizer needed by Asia, Africa, and Latin America in 1970 will have to be imported from the industrialized countries. Some countries would have the foreign exchange to buy the fertilizer they need through commercial channels, but most countries would have to rely on foreign aid.

Self-Sufficiency by 1980

For the longer term in 1980, most countries should plan to become largely self-sufficient in fertilizer production—at least the larger countries. In round num-

bers. fertilizer plants cost about $1 billion per 6 million tons of annual production of finished fertilizer (on a plant nutrient basis). Therefore, enough fertilizer plants to produce 30 million tons of fertilizer would cost about $5 billion—10% of the cost of putting a man on the moon. If 30 million tons of fertilizer were produced and used in Asia, Africa, and Latin America, it would be a giant step toward solving the world food problem in 1980. Historians of the future may remark on whether it was more important to have devoted our resources during the 1960's to putting a man on the moon or to have devoted our resources toward averting the world famine of the 1970's.

Total world fertilizer production should be approaching at least 100 million tons of plant nutrients in 1980 compared with 30 million tons at present. The western world (including Japan) is now producing about 25 million tons and will probably increase to 50 to 60 million tons by 1980. The Soviet Union now produces about 4 million tons and is planning for 30 million in 1980. Asia, Africa, and Latin America will need 30 million tons in 1980, which hopefully they may get from their own production or from the western world. China is producing less than 1 million tons now, but it is reported to be planning a large increase.

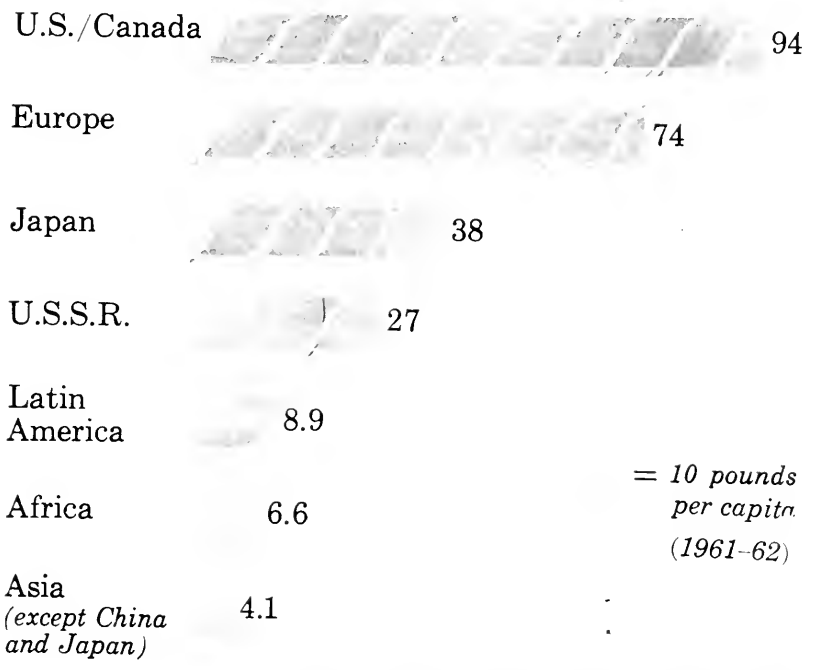
The aggregate construction cost of $1 billion per 6 million tons of plant nutrients was based on a N–P_2O_5–K_2O ratio of 2–1–0.75. This was selected as the ratio that Asia and Latin America appear to be heading toward, although Africa has a somewhat different pattern. Therefore, the 30 million tons postulated for 1980 would be divided 16 million tons N, 8 million tons P_2O_5, 6 million tons K_2O. Also, the aggregate construction cost is based on these estimates:

- Per 100,000 tons N, $20 to $25 million.
- Per 100,000 tons P_2O_5, $8 to $12 million.
- Per 100,000 tons K_2O, No processing needed.
- Per 100,000 tons mixing capacity, $1 to $1.5 million.

The fertilizer and fertilizer plants needed by the countries of Asia, Africa, and Latin America will largely have to come from the industrialized countries, including the U.S., Canada, western Europe, eastern Europe, the Soviet Union, and Japan. In fact, these will have to be given largely to these countries for the simple reason that they don't have any money. The value of the fertilizer would be roughly $150 million per million ton of plant nutrient in the 2–1–0.75 ratio. Therefore, if 10 million tons of fertilizer were given to the needy countries in 1970 this would be worth $1.5 billion.

Such a foreign aid program could be carried out through a series of bilateral agreements or it might be carried out more efficiently through a multilateral program. For example, such a program could be carried out through an International Fertilizer Supply Agency set up to handle the distribution of foreign aid fertilizer for all the industrialized countries.

Latin America, Africa, and Asia trail far behind developed countries in fertilizer use



Source: United Nations, Food and Agricultural Organization Yearbook, 1962

Per capita use of fertilizer in Latin America, Africa, and Asia lags rest of the World—1962–63

[Thousands of metric tons of plant nutrients]

	Oceania	United States, Canada	Europe	Japan	U.S.S.R.	Latin America	Africa	Asia
Nitrogen (N)	50	3,554	4,920	669	1,070	356	400	1,181
Phosphorus (P_2O_5)	890	2,937	4,830	465	853	323	310	405
Potash (K_2O)	90	2,291	4,880	506	826	219	100	194
Total nutrients	1,030	8,782	14,630	1,640	2,749	898	810	1,780
Population, millions (1962)	17.2	206	434	95	221	224	269	952
Nutrient, pound per capita	132	94	74	38	27	8.9	6.6	4.1

NOTE.—Excluding China and Japan.

Source: FAO Production Yearbook, 1963.

Likewise the fertilizer plants would have to be given to the needy countries in the form of foreign aid. As already noted, about $5 billion worth of fertilizer plants are needed by all the countries of Asia, Africa, and Latin America by 1980. The product from $5 billion worth of plants would have an annual market value of about $4 billion.

Even after the quantities of fertilizer we have been discussing became available, there would still be a big educational job ahead to get farmers to use the fertilizer. This would require an extensive and intensive propaganda campaign together with adequate economic incentives. The countries of Asia (except Japan, of course), Africa, and Latin America do not have enough agricultural specialists in their own countries to put over such a program. Therefore, the western world and Japan would have to supply thousands of agricultural specialists if an intensified fertilizer program were to be successful.

The oceans offer a possibility of increased food production, but capital costs are high and the realistic potentials are generally overestimated. Total food from the sea, including both fish and vegetable matter, provides less than 1% of the total calories consumed in the world today, although fish may provide as much as 3% of total protein consumed. On the face of it the possibility of food from the sea playing a major role in feeding the hundreds of millions of additional human beings during the next 10 to 15 years does not seem realistic. Moreover, the capital investment required per unit of additional food from the sea is much higher than in conventional land agriculture.

Programs for Action

To recapitulate then, there are several programs which need to be carried out concurrently to avert, or at least to alleviate, the impending food crisis in Asia, Africa, and Latin America:

Program. Shipment of surplus food from food-surplus countries to food-deficit countries.

Significance. This is now being done, of course, and will be particularly important during the next five to 10 years, and will probably continue indefinitely.

Program. Shipment of fertilizer from fertilizer-surplus countries to fertilizer-deficit countries.

Significance. Important during the next five to 10 years, but should be replaced by indigenous manufacture of fertilizer as soon as possible.

Program. Expansion of fertilizer manufacturing industry in fertilizer-deficit countries.

Significance. Should be accelerated as rapidly as possible and will be particularly important in the 1970's and 1980's.

Program. Reduction in birth rate and population growth rate in food-deficit countries.

Significance. Food-deficit countries should make plans to reduce the birth rate to less than 20 per 1000 and the population growth rate to less than 1% per year, as Europe and Japan have already done. This is the only ultimate solution to the food/population problem.

The developed countries will have to give major assistance to the underdeveloped countries if this great food problem is to be solved. The underdeveloped countries simply cannot do it on their own resources. The alternative will be widespread famine and political instability on a scale unprecedented in the world's history.

We have been considering some far-reaching and very complex problems. I am sure that greater use of more fertilizers is the most promising approach to solving the world food problem, at least in the relatively short term of 10 to 15 years. Without a great deal more fertilizer, the people of Asia, Africa, and Latin America are going to be much hungrier in the 1970's than they are now. Thomas Malthus has had many deprecators in the past, but it looks as though he may be proved right after all—unless the world's resources are mobilized soon and effectively.

Senator GRUENING. The next meeting of this committee will be on February 16 and we hope at a better hour.

The meeting is adjourned.

(Whereupon, at 11 a.m., the committee adjourned, to reconvene on Wednesday, February 16, 1966.)

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